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You're Getting It!: How Preschool Teachers and Students Experience Literacy Tabletop Games in the Classroom

Katherine Sydik
University of Nebraska-Lincoln, ksydik@huskers.unl.edu

YOU'RE GETTING IT! HOW PRESCHOOL TEACHERS AND STUDENTS EXPERIENCE LITERACY TABLETOP GAMES IN THE CLASSROOM

by

Katherine A.W. Sydik

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Katherine A.W. Sydik, Ph.D.

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Advisers: Roger H. Bruning

The purpose of this qualitative instrumental case study was to examine affordances of literacy tabletop games in a preschool classroom environment as well as the experiences of young children between the ages of 3 and 6 and teachers playing the games. The following themes emerged from the research: *"That's How Games Are"* relating to views about games and play, *"How The Teacher Does It"*, relating to developmentally appropriate educational practice for playing games with preschool children, *"A Way to Keep Them More Engaged"*, relating to preschool children's motivation while playing literacy games, *"Things Kids Need to Know for Kindergarten"*, relating to emergent literacy skills supported by the games, *"Maybe She's Thinking"*, related to cognitive aspects of games and *"A Lot of Teamwork and Effort"* related to sociocultural considerations when playing literacy games with preschool children. Themes were identified from two forms of data collection: observations of classroom game play and interviews with preschool children and teachers. The study is intended to facilitate a broader understanding of play with literacy-oriented games in early childhood classrooms, inform best practices for classroom and other educational activities, and identify implications for future inquiry.

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1 | Introduction

> *"A child's greatest achievements are possible in play – achievements which tomorrow will become his average level of real action and morality."*
> – Lev Vygotsky (1933/1966)

Children have ideas and stories to tell, and learning about written language opens pathways to broader participation and expression. There are benefits to early literacy learning in preschool, such as increased letter knowledge, which is a strong predictor of later success in early elementary grades (Chaney, 1998; National Early Literacy Panel, 2008; Storch & Whitehurst, 2002). In a world where literacy instruction has frequently been reduced to a sequence of structured tasks and objectives, however some educators and researchers hold concerns that many students taught in this fashion have been denied opportunities to engage with language holistically and using it to make meaning of their environments. In addition to this reduction to structured tasks, there has also been a dramatic shift towards earlier instruction of literacy skills following the passage of the No Child Left Behind Act of 2002 and the Head Start for School Readiness Act of 2007 (Roskos & Vukelich, 2006). These shifts have caused controversy in the educational profession, however, with critics raising concerns that overfocus on cognitive skills training and the dominance on classroom time use that this represents could take away from play and other activities found to be beneficial in the development of social and emotional competencies (Elkind, 1986, 2008; Hirsh-Pasek, Golinkoff, Berk, & Singer, 2009; Lillemyr, 2009; Zigler, Singer, & Bishop-Josef, 2004). Games, which have been used throughout history as a powerful teaching and learning tool, (Abt, 1970; McGonigal, 2011) are one potentially

valuable approach to supporting literacy learning in a way that is both structured and open to construction of meaning.

While the use of literacy activities is a frequently recommended best practice for early childhood education (Copple & Bredekamp, 2009), detailed descriptions for implementation are often not provided. Filling this gap in best practices information is important, as when demands of educational content and game play needs are not supported, games often become less effective instructional tools (Farber, 2015; Salen & Zimmerman, 2004). Additionally, activities provided in the literature as exemplars could more often be described as game-like activities rather than formal games with structured rules (e.g., Brennan & Ireson, 1997; Feber, 2013; Lewis & Bedson, 1999; A. Wright, Betteridge, & Buckby, 1984).

The current study explores tabletop board games as tools for supporting preschool literacy learning. Observing children and teachers playing literacy games in a preschool classroom setting, and interviewing them about their experiences provides a broader understanding of the classroom affordances of literacy tabletop games and how they are played in these settings. This study was designed to provide guidance to early education teachers and parents in setting expectations of how games can influence children's development, give insights to game designers in developing literacy games better suited to the needs of the preschool age range, and to add to the research literature on games and learning.

The experiences of preschool children and teachers playing literacy tabletop games can be better understood in the context of theories in the domains of game studies, child development, early literacy, and motivation as well as sociocultural factors, and may yield insights regarding desirable and undesirable affordances of literacy games, the qualities or properties of an object that define possible uses (Gibson, 1977), as well as best practices for classroom use that improve the educational effectiveness of playing literacy tabletop

games with preschool learners.

Importance of Literacy Skills Building in Early Childhood

Children's literacy skills entering kindergarten are associated with later reading achievement (Copple & Bredekamp, 2009; Cunningham & Stanovich, 1997; Denton, West, & Walston, 2003; Diamond, Gerde, & Powell, 2008; Lepp´anen, Aunola, Niemi, & Nurmi, 2008). Phonological awareness skills are particularly important for early reading development (Storch & Whitehurst, 2002; Torgesen, 2002; Xu, Chin, Reed, & Hutchinson, 2014). Failure to develop basic decoding skills by first grade is predictive of lifelong poor literacy (Lonigan, Farver, Phillips, & Clancy-Menchetti, 2011; National Early Literacy Panel, 2008; Wolf, 2016). Many children enter kindergarten with little knowledge of letter names and sounds, even though knowing the letters of the alphabet and understanding connections between letters and sounds strongly predict reading achievement (Whitehurst & Lonigan, 2001). A well-balanced curricular approach recognizes the benefits of academic skills and play to curriculum and pedagogical practices for early childhood education (Bredekamp, 2004; Copple & Bredekamp, 2009; S. L. Kagan & Lowenstein, 2004; D. G. Singer, Singer, Plaskon, & Schweder, 2004).

The Current State of Play in Early Childhood Education

Play is encouraged by the National Association for the Education of Young Children (NAEYC) as a developmentally appropriate practice at the preschool level (Copple & Bredekamp, 2009) and can provide a framework for understanding children's social, cognitive, and emotional development (Piaget, 1945/1962; Vygotsky, 1930/1978, 1934/1986). Most research on the play of young children, however, has focused on free or dramatic play (Christie, 1991; Morrow, 2007; Wohlwend, 2011). Free play allows children to ex-

periment with objects and activities of their own choice with minimal external structure or guidance. Dramatic play involves acting out common situations or imaginative stories.

Play is often viewed as a source of developmental preparation for more complex cognitive activities such as formal literacy instruction (Hall, 1991; Neves & Reifel, 2002) and used to build connections between oral and written expression (Roskos & Christie, 2013; Neves & Reifel, 2002). Children can learn literacy skills by interacting with props, materials and equipment in sociodramatic play. These activities provide children an opportunity to develop print awareness and to understand that text can be used to represent objects and behaviors (Roskos & Christie, 2013).

Playful activities such as singing, reciting nursery rhymes, reading books, and game-like language activities involving word and sound play such as those described by Adams, Foorman, Lundberg, and Beeler (1998) also can promote phonological awareness. Using direct instruction to draw attention to individual letters or to point out starting letters of objects may not be relevant to young children and may need to be embedded into another familiar or meaningful play activity (Christie & Roskos, 2006; S. L. Kagan & Lowenstein, 2004; Roskos & Christie, 2000). When teachers are able to integrate classroom practices with meaningful play in this manner, their students are afforded opportunities to create and develop meanings and identities (Wohlwend, 2013).

Games as Constructivist Play in Early Childhood

When viewed from a constructivist framework, in which children are seen as building their understanding about the world through observations, questions, and interactions with objects and people, games can be seen as having the potential to motivate and engage students, promote interaction, provide practice opportunities, and reveal areas of skill as well as those in need of improvement (Carrier & London Centre for British Teachers,

1986; Garris, Ahlers, & Driskell, 2002; Gee, 2003; Takeuchi & Vaala, 2014). Piaget (1936/1952); Vygotsky (1934/1986); Dewey (1910), and others have described learning as an active process where learners generate knowledge through exploration, construction, and self-expression. Beyond hands-on activities, constructivist learning relies upon mental reflection (Dewey, 1897, 1913, 1915). Structured play in the form of games can provide a valuable framework for exploring ideas in this manner.

Most games research from the last two decades has focused on digital games and typically has not addressed the specific needs of preschool age children. Tabletop games have the potential to afford more flexibility than digital games, particularly to classroom teachers, as customization of tabletop game experiences can be achieved with less expense and fewer technical obstacles than digital games. As noted by Pellegrini (2009), further research is needed to address gaps in the literature in the area of play and games, particularly in light of the amount of interest and investment in this area in society at large.

Motivational, Cognitive, and Social Considerations

Recognizing the benefits of play in early childhood by providing a game activity does not guarantee that all players will find the experience fun or engaging. It may be appealing, for example, to look at games as a form of reward, but this has consequences that need to be considered. Using game rewards to increase motivation may have some short-term benefits, but these gains are often offset by negative consequences to long-term motivation. Learner engagement increases when motivation toward a given behavior is integrated and aligned with identity, values and goals (Deci & Ryan, 1985; Ryan & Deci, 2000). Issues of competition and cooperation are also important to consider. Cooperation tends to facilitate performance (D. W. Johnson & Johnson, 1989), but the effects of

competition on motivation may be negative in situations where rules are unclear or some players have no realistic chance of winning (Burguillo, 2010; D. W. Johnson, Maruyama, Johnson, Nelson, & Skon, 1981; Kohn, 1992; Vallerand, Gauvin, & Halliwell, 1986). Additionally there may be individual and cultural differences that influence children's views toward competition.

In addition to motivational factors, it is also beneficial to explore cognitive considerations surrounding games. Schema theory and the information processing model provide a model for how the mind acquires, represents, transforms, and constructs meaning from information (R. C. Anderson & Pearson, 1984). Early literacy skills such as phonemic and phonological awareness tasks place heavy cognitive load demands on working memory until expertise and automaticity develop (Castles, Wilson, & Coltheart, 2011; Carroll, Bowyer-Crane, Duff, Hulme, & Snowling, 2011; Rohl & Pratt, 1995). Repeated practice with phonics activities and letter manipulation can reduce the amount of effort or thought required for these tasks (Eldredge, 2005; National Early Literacy Panel, 2008; Stahl, Duffy-Hester, & Stahl, 1998; Wolf, 2016), and allows more cognitive capacity for comprehension (e.g., Kuhn, Schwanenflugel, & Meisinger, 2010; Logan, 1997; Paas, Renkl, & Sweller, 2003; Samuels, 1994). Instructional design and presentation of activities can also have a significant impact on cognition and learning outcomes (Harp & Mayer, 1998; R. E. Mayer & Moreno, 2003).

Early literacy includes both the basic mechanics of learning to read and, sometimes more importantly, the ways in which children learn language in social contexts (Gee, 2001, 2004, 2008; Purcell-Gates, 1996). During the preschool period, children develop social competencies (Santos, Vaughn, Peceguina, Daniel, & Shin, 2014), and experiences with tabletop games can promote development of social interaction and self-regulation skills (Salmina & Tihanova, 2005). Understanding the sociocultural contexts in which literacies are developed may help teachers to create better learning experiences for learners.

In these ways, games would seem to have the potential to serve as a valuable intersection between structured play and academic literacy skill instruction, with benefits to skill development through repeated practice and hands on manipulation, and as a rich environment for the acquisition of social and self-regulatory skills. It is important to understand how well the particular tasks required by a game are aligned to a child's level of development and cultural experiences. Determining how these skills and abilities develop while playing a game and estimating appropriate age ranges for a game to be used are central to providing best practices for teachers (Salmina & Tihanova, 2005).

Statement of Purpose

The purpose of this research was to explore the experiences of preschool students and teachers while playing literacy board games and how these experiences are impacted by the affordances of these games.

Specifically:

- What affordances are provided by tabletop games relevant to preschool classrooms?
- What can be understood about children's motivation and interest for games and for literacy when playing literacy games in their classroom?
- How do teachers connect literacy games to classroom curriculum and student interest?
- How do young learners, who are developing social interaction skills experience the social play of games?
- What are implications for best practices?

Central Question and Positioning

When studying experiences with qualitative methodology, it is important for researchers to frame their work in terms of a central question as well as to declare their personal positioning from which they approach research (Creswell, 2013a). The central question of the present research is, "How are literacy tabletop games experienced by learners and teachers in a preschool setting?"

In qualitative research, a worldview paradigm is a basic set of beliefs and assumptions that frame and guide thought, inquiry, and specific methodology (Guba & Lincoln, 1994). The present qualitative research study is framed via a social constructivist worldview paradigm (Denzin & Lincoln, 2011). Under this paradigm, participants are viewed as experts with unique perspectives that add to deeper understanding by bringing multiple meanings from their unique social and historical contexts. These things lead to meaning co-creation (Denzin & Lincoln, 2011).

This positioning of the researcher is generally defined in terms of what is called a theoretical lens. A theoretical lens captures insights about researcher positioning, types and forms of questions asked, how data are collected and analyzed, and provide a framework for explanation (Creswell, 2013a). The lens of the present research is largely informed by the theories of John Dewey, Lev Vygotsky, and James Gee. The following principles shape this lens:

- Learning is an active process of knowledge construction, best encountered through engaging learning experiences.
- Play is an important factor in development at the preschool age.
- Learning occurs within a cultural context, which shapes meaning.

- Child-centered, experiential, and meaningful learning are preferable to passive learning.
- Learners should be given appropriate challenges.
- Instruction should give opportunities for reflection and connection to prior knowledge.

In order to better understand the researcher's position in conducting this research, it should be noted that games have been an important experience in my life since childhood and have been part of the education of my own children. Also of note is my familiarity with the facility where research was conducted, as my children have previously or are currently attending the school.

I am fascinated with the brief, but important, period when children move from pre-readers to learning foundational literacy skills necessary for cracking the code of written language. I do not see it as beneficial to deliberately withhold this information from children who are capable and eager to learn about written language. In addressing the role of games for early literacy learning it may be helpful to examine theoretical background in the areas of play, development, motivation, cognition and social factors particularly as these theories relate to and inform games and early literacy.

2 | Review of the Literature

The present study is intended to identify affordances of tabletop games for early literacy instruction at a preschool level, and explore how these affordances positively or negatively impact the experiences of students and teachers playing the games. In exploring these interactions, this study spans several broad areas of inquiry—play, games, developmentally appropriate practice, emergent literacy skills, motivation, cognition, and sociocultural contexts. It is important then to examine how theories in these areas relate to the play of literacy tabletop games by preschool children and teachers. At the end of this chapter, my own prior qualitative work (K. Sydik, 2015) is discussed in light of the existing literature on the topic.

Play

Play has been important to humans throughout history (Farber, 2015; Huizinga, 1955; Salen & Zimmerman, 2004) as well as to many other animal species (Smith, 2009). Surprisingly, play was not considered a subject for academic inquiry until idealized by the romantic movement of the late 18th century (Cohen, 1993). The dominant view of play in the Victorian era put play in diametric opposition to work. This view continues to be echoed in the dismissal of play in schools as a wasteful diversion of limited time and budgetary resources, and defended with reference to the lack of strong evidence to support play's benefits in achieving the currently dominant pursuit of improved standardized achievement test scores (Glickman, 1984; J. L. Singer, 1995).

Considering the varied viewpoints about the nature of play, it is perhaps unsurpris-

ing that providing an agreed upon definition for the concept of play is also challenging. Many theorists have explored concepts related to play, but their conclusions have often been diverse and contentious. For extensive reviews and comparisons of historical and contemporary definitions of play see Hirsh-Pasek et al. (2009); Lillemyr (2009); Salen and Zimmerman (2004); Saracho and Spodek (1997); Sutton-Smith and Pellegrini (1995); Yawkey and Pellegrini (1984). In examining these definitions of play, the following attributes are frequently mentioned:

- Play is an activity with no sake other than itself and no focus on an outcome (Dewey, 1910; Huizinga, 1955).
- Play is engaged with freely and voluntarily (Caillois, 1961; Huizinga, 1955; Saracho & Spodek, 1997).
- Play is motivated by personal satisfaction from the activity itself rather than by social or external demands, rewards, or goals (Huizinga, 1955; Rubin, Fein, & Vandenberg, 1983).
- Play occurs in an isolated conceptual space separate from the "real world". Huizinga (1955) referred to this space as the "magic circle", but the notion has been also discussed in terms of play spaces (Salen & Zimmerman, 2004), affinity spaces (Gee & Hayes, 2011), and ludic (playful) learning spaces (Kolb & Kolb, 2010).
- Play is important to human development, particularly in terms of cognitive, social, and moral development (Athey, 1984; Cohen, 1993; Pellegrini, 2009; Piaget, 1932/1965; D. G. Singer, Golinkoff, & Hirsh-Pasek, 2006).
- Play is an activity for children. Piaget (1945/1962) saw play as part of a continuum toward work, allowing children to assimilate and internalize features of their external world, but believing that play should fade away as children become more competent

at coping with real objects, and situations. Similarly, Vygotsky viewed play as an activity for children to develop self-regulation and expand their zone of proximal development (Vygotsky, 1934/1986).

- Play fosters creativity and imagination and can be a way to keep balance in society as well as introducing new and transformative ideas (Fleer, 2011; Huizinga, 1955; Lieberman, 1977; McGonigal, 2011; J. L. Singer, 1995; D. G. Singer & Singer, 2005; Sutton-Smith, 1984).

One could argue that there are flaws in many of these historical and current perspectives and definitions. Play often involves challenging or difficult tasks, and when people deliberately choose to engage in play, they often devote great effort, therefore it seems clear that play is neither in clear opposition to work nor an activity limited to children (Blanchard & Cheska, 1985). If voluntary and free engagement are taken as requirements for an activity to be considered a form of play, it would seem that any kind of educational game or play lead by teachers in the classroom as advocated by educators and researchers would be suspect. This is clearly not the case.

The phrase "playing a game" would be less common if games, while having rules, were not generally considered to be playful by nature, though external factors may motivate many players. The gambling industry makes huge profits from individuals playing for the thrill of chance or hope of reward. It seems possible to be playful and have fun in pursuit of victory, professional gain, or other reward-driven contexts such as an athlete "playing ball". Conversely, if a student finds the experience of playing kickball or dodge ball, which are commonly understood to meet the definition of game, to be boring or humiliating, this does not prevent the experience from being a game by definition, though it may disqualify it as "play" for that student. As a general rule, increased volition and more active engagement tends to lead to higher enjoyment of an experience (Corno, 1993).

But is it truly possible to separate "play" from "real life"? Play takes place in real spaces and contexts that are likely to impact interpretation of events in the course of play (Gee, 2001, 2008; Gee & Hayes, 2011; Salen & Zimmerman, 2004). Play experiences also have many similarities to flow experiences. Flow experiences involve clear goals which help to focus attention on relevant information, provide immediate feedback on progress, balance challenge to skill level, and intensify concentration in an altered sense of time where awareness is blended as part of the activity and control process (Csikszentmihalyi, 1978, 1990). For the purposes of the present study, and acknowledging the variations in definition discussed, my definition of play will be participation of active agents within a discourse space. For clarification, however, the focus of this study will be on how *participants* experience and view play rather than on pressing this definition onto their experiences.

Games

As with play, there is disagreement and controversy in establishing definitional boundaries of what constitutes a game as opposed to a toy, puzzle, activity, simulation or other form of entertainment. Examining previous work, ways to set boundaries include the following:

- Games can be defined by a presence or non-presence of specific features (Crawford, 2003; Wittgenstein, 1953).
- Games focus on rules or some other form of limiting contextual structure (Abt, 1970; Avedon & Sutton-Smith, 1971; Caillois, 1961; Maroney, 2001; McGonigal, 2011; Salen & Zimmerman, 2004).

- Games are centered around fictitious or artificial conflict (Caillois, 1961; Salen & Zimmerman, 2004).
- Games have variable outcomes determined by the actions of players while pursuing goals (Abt, 1970; Crawford, 2003; McGonigal, 2011; Salen & Zimmerman, 2004).
- Games provide feedback to the players (McGonigal, 2011).
- Games must be engaged in voluntarily (Avedon & Sutton-Smith, 1971; McGonigal, 2011).
- Games must be playful or fun (Caillois, 1961; Maroney, 2001).

In the present study, games are framed as activities involving rules that establish boundaries for the physical and conceptual ways players interact with the game and with one another and that provide feedback about how well players are performing within the context of the game. While winning conditions and artificial scenarios are common aspects of many games, these are not necessary prerequisites for an activity to be considered a game. Rather than dwelling too closely on the intent of the rules and outcomes established by game designers, the current study focuses instead on how *participants* experience the games as played in the spirit of the following quote from James Gee as cited in Farber (2015) pg. 31:

> "I don't care about the definition of a game [...] Good games set up learning and how to teach. [...] It is taking principles from games and extending them across multiple platforms, multiple tools, and multiple forms of participation—one of which happens to be games. [...] When people learn something new and they gain mastery, they are profoundly satisfied. The issue is how do we get engagement by an affiliation, not whether we call it play or call it a game. [...] What we want to say is, 'What's the interactivity? What's the

> engagement? What are the values?' Let's ask important questions, not trivial questions like what's a game."

Games are not "just" for play, but can be used for a wide variety of "serious" purposes such as teaching, training, and preparing youth for adult roles (Abt, 1970; Becker, 2010; McGonigal, 2011). While people have been learning with games for thousands of years (Farber, 2015; Salen & Zimmerman, 2004), the history of games in education is a mixed one. Bringing effective games to students has many barriers. Administrators or teachers may see play as frivolous, and students may be negatively biased by previous experiences with poorly designed or boring learning games, which are frequently little more than "drill-and-kill" worksheets in disguise. This form of worksheet *gamification* or the practice of adding game-like elements to activities, often fails to incorporate engaging game play with educational content and tends to result in products derisively labeled by the games research community as "chocolate covered broccoli". Other *edutainment* games, marketed as educational materials, incorporate game aspects but typically focus only superficially on small or tangential pieces of educational content (Farber, 2015; Salen & Zimmerman, 2004). Simply adding game elements that are not integrated with content tends to be ineffective, although gamification can be beneficial to learning in some circumstances where students are allowed opportunities to make choices, and when rewards provide feedback on meaningful or authentic achievements (Deterding, 2014; Deterding, Dixon, Khaled, & Nacke, 2011; Isaacs, 2015; Nicholson, 2015; Salen & Zimmerman, 2004).

Game-based learning involves integration of games into curriculum and learning experiences in educational contexts in a manner where learning comes from playing the game, often with a focus on problem solving and critical thinking (Farber, 2015; Isaacs, 2015; Salen & Zimmerman, 2004). Prominent examples of games used from a game-based learning perspective include *Oregon Trail* (Rawitsch, Heinemann, & Dillenberger, 1974),

SimCity (W. Wright, 1989), and *Minecraft* (Persson, 2011). One good example of a non-digital game-based learning project is the *World Peace Game* (Hunter, 2013).

Most recent research in the field of game studies has been focused on video games, typically in STEM areas, and predominantly focus on a population of middle school or high school students. In one study that looked at elementary as well as middle school students, conducted by the Joan Ganz Cooney Center, approximately 700 kindergarten through eighth grade teachers were surveyed about their use of digital games in their classrooms (Takeuchi & Vaala, 2014). Approximately 80 percent of surveyed teachers reported that students play games in classrooms at least once a month, and 55 percent reported using games at least once a week. The report provides useful insights into the types of games being used, purposes of the games, as well as benefits and barriers to use of digital games in classrooms, but was limited to the use of digital games and did not consider students at the preschool level. As a result, these findings may or may not accurately represent the use of tabletop games to teach literacy concepts to young children. Different delivery methods, subject areas, and target audience could potentially result in different outcomes.

Recently, there has been growing interest in the use of tabletop games in schools and libraries (B. Mayer & Harris, 2010; Nicholson, 2008, 2009, 2011, 2014). While there are still relatively few studies that directly study non-digital tabletop games in terms of early education, findings include a linear number board game found to increase preschool children's numerical knowledge (Laski & Siegler, 2014; Ramani, Hitti, & Siegler, 2012; Ramani & Siegler, 2008), addition strategies for first graders using dice in a modified *Chutes and Ladders* game (Bjorklund & Rosenblum, 2001), and comparing effects of picture book storytelling and game-playing instructional approaches on vocabulary recognition for kindergarten students in Iran (Hemmati, Teimoori, & Jafarigohar, 2013). People have been playing classic tabletop games such as *Mancala*, *Go*, *Chess*, *Senet*, and *Snakes and*

Ladders for centuries, and these games have historically been centered around teaching skills, reinforcing religion and culture, or demonstrating tactical strategy (Farber, 2015).

Digital games have beneficial affordances that cannot be easily met through tabletop game formats such as lack of limitation on board size or number of game components, ability to pause or save games, and reduced classroom needs of time and physical space for game setup. Tabletop games also provide advantageous affordances in classrooms. Tabletop games may allow greater low-cost flexibility for teacher modification than software equivalents. As an example, Lengeling and Malarcher (1997) suggested index cards as a cheap source for creating learning games and activities. Creating and maintaining software can be expensive, technology often requires training for teachers and students, hardware and software quickly become obsolete, and addressing technical difficulties takes time away from educational priorities (Åberg, Lantz-Andersson, & Pramling, 2014). It is important to consider the affordances of many types of play and games in order to correctly match potential benefits to particular situations and needs.

Developmentally Appropriate Practice and Games

While it is clear that young children are capable of playing some kinds of tabletop games, research on the role of tabletop games in early childhood education requires understanding of both child development and game properties. Important properties of tabletop games intended for use at the preschool level include clear, simple rules that can be easily explained by a teacher, safe and durable game components sized for young players, and reasonably short play times. Another valuable property is the potential for modification based on the developmental characteristics of players such as their symbolic understanding or motor skill. Cognitive abilities necessary for playing tabletop games and that researchers and teachers should consider when making game selections may include

perception, speech, symbol recognition, memory skills, ability to follow instructions, and ability to strategize about play actions of self and others. Game play also involves communication, social skills, and good sportsmanship. These properties can inform parents' and teachers' expectations of good games for influencing children's development (Salmina & Tihanova, 2005).

From a constructivist perspective, young children are seen as building their understanding about the world through observations, interactions with others, physical manipulation of objects through play, reflection, imagination of possibilities, and seeking answers to their questions in their environments. These methods promote deeper understanding when used to apply information to new contexts (Bransford, Brown, & Cocking, 1999; Hirsh-Pasek et al., 2009; J. E. Johnson, Christie, & Wardle, 2005; Copple & Bredekamp, 2009). Several prominent theories and bodies of research view cognitive development from a constructivist perspective.

John Dewey saw education as an active constructive process experienced through interactions with others and with concrete objects. He also promoted the purpose of education as preparation for students to be full participants in a democratic society. He advocated child-centered experience based learning, where students have opportunities to be involved with their own learning through exploration, construction, and self-expression, instead of by sitting as the passive pupils of a predetermined curriculum (Dewey, 1897, 1915, 1916). According to Dewey, "...it is impossible to procure knowledge without the use of objects which impress the mind" (Dewey, 1916, p. 277). This requires more than simply hands-on learning, however, but also promotion of reflective learning that connects new information with students' interests and prior experiences (Dewey, 1913). Because of these perspectives, Dewey opposed formal instruction at the preschool level, including reading instruction, as developmentally inappropriate. He did, however, encourage taking advantage of teachable moments that emerge through activity center play experi-

ences where children connect learning to meaning and purpose through exploration and experimentation with materials in social settings (Dewey, 1916; Morrow, 2007). While promoting child-centered learning, Dewey also encouraged careful limits as well; cautioning that taking this approach too far can undermine the important roles played by teachers and curriculum (Dewey, 1902).

Lev Vygotsky also viewed learning as an active process experienced both internally and socially and as a continual process. From his perspective, development is embedded in the context of the goals, values, customs, and history that are shared through social interaction. As a consequence, cooperative discourse is essential to both the development of cognition and culture (Vygotsky, 1934/1986). Vygotsky also viewed learning as most effective when it occurs within a child's *zone of proximal development*, the distance between actual and potential level of development for tasks too complicated for an individual to do alone but possible with guidance from teachers or skilled peers (Vygotsky, 1930/1978). As an example of using zone of proximal development in the early literacy domain, Aram, Abiri, and Elad (2014) found that parents who adjusted their guidance to children's actual levels of literacy development were able to coach children toward higher levels for spelling. Similarly, Lonigan, Allan, and Lerner (2011) found that using children's play as a method of informal assessment of skill allowed facilitation of increased or decreased levels of scaffolding based on children's specific needs. Vygotsky (1933/1966) viewed play as important to the cognitive development of young children, challenging thinking and helping to develop social, cognitive, emotional, and communication skills, which can be used in a variety of contexts. Supporting Vygotsky's notions of the role of play, Coolahan, Fantuzzo, Mendez, and McDermott (2000) found that positive interactive play was associated with improved self-regulation and active engagement in classroom learning activities. Play also allows a safe approach to exploring and experimenting with assumptions about reality at the edge of the zone of proximal development. Young children speak to themselves

when performing challenging tasks, and from Vygotsky's perspective, this private self-talk assists self-regulation (Vygotsky, 1933/1966).

Jean Piaget viewed play as a framework for understanding intellectual and moral development of children (Piaget, 1932/1965), and as a way for children to assimilate features of the surrounding world as they interact with objects (Piaget, 1945/1962). Piaget associated specific age ranges to discrete levels of cognitive development, rather than as a continual process. According to Piaget's stages of cognitive development, preschool age children, in the preoperational development stage, are probably not capable of understanding complex logical rules or distinguishing other people's viewpoints. Preschool children have limited abstract thinking skill and may find it difficult to develop complex strategies or make rational judgments (Piaget, 1936/1952; Piaget & Inhelder, 1950/1969). Subsequent research has shown that young children are more competent and capable of classification, conservation, or representation tasks at earlier ages than originally predicted by Piaget (Duckworth, 1979). According to Piaget, people do not absorb information passively, but have active agency in constructing knowledge by reconciling disequilibrating information through processes of assimilation and accommodation (Piaget, 1936/1952).

Motivation and Games

Motivational theories relevant to games can provide important insight in understanding ways game playing might impact young children's potential motivation for literacy learning. Motivation represents the reasons, needs, and desires that influence people's actions. Theories of motivation, such as self-determination theory (Deci & Ryan, 1985; Ryan & Deci, 2000) focus on the processes that impact how people develop motivation based on utility or identity.

An important subtopic of motivation related to games is that of rewards. Rewards

have been used throughout history to change or influence behavior. As B. F. Skinner (1938) has shown, operant conditioning with rewards and punishment can be effective at influencing motivation and behavior (Reynolds, 1975). Rewards can be effective at encouraging engagement, but this effect is typically durable only in the short-term and may have an overall negative effect in the long-term. For example, reward-based gamification features such as badges, leaderboards, achievements, and points are often used to promote engagement (Nicholson, 2015). Unless the activity is meaningful in a deeper sense, participants will only engage in order to receive the rewards and are likely to stop engaging if rewards are discontinued (Zicherman & Cunningham, 2011), or undermine interest by sending the message that the reason for engagement is related to receiving rewards instead of an inherent value in the activity (R. Anderson, Manoogian, & Reznick, 1976; Lepper, Greene, & Nisbett, 1973). Rewards also can discourage risk-taking especially when participants do not have control of, or interest in, the activity (Bernstein, 1990).

People tend to be motivated by different factors and what is motivating for one person may potentially be non-motivating or even demotivating for others. Caillois (1961) examined different types of motivation in games. Caillois did not try to distinguish between games for children and adults, but looked at games broadly. He identified four category types, labeled with Latin roots, of motivation served by games. Agon (games) involves the "pleasant frustration" of overcoming challenges or winning competitions (e.g. Chess), alea (gambling) involves feelings of anticipation around factors of random chance or luck (e.g. Poker), mimicry involves imagination and acting (e.g. role-playing games), and ilinx (motion) relates to a sense of vertigo or thrill of being in motion (e.g. dexterity challenges).

Writing about primarily adolescent or adult players of multi-user dungeon (MUD) games, Bartle (1996) similarly describes four types of players based on their primary

motivation in digital games. The main goal for *achievers* is obtaining the most points or winning the game, *explorers* focus on interesting features and figuring out how game mechanisms function, *socialisers* are predominantly interested in interactions between people within the backdrop setting of a game, and *killers* find enjoyment in controlling other players or causing them distress. While Bartle's classifications are based on digital games, they are also readily applicable to tabletop games. Different games may also combine multiple elements in various ways, which may or may not be motivating or fun for any given player (Lazzaro, 2003).

Self-determination theory (SDT) can be applied to games. SDT relates to the extent to which an individual's motivation and behavior is aligned with their self-identity (Hidi, 1990). Engagement tends to increase as one's motivation for behavior is integrated and aligned with their identity, values and goals. Three critical factors were identified as influencing motivation and behavior: autonomy, mastery, and relatedness (Ryan & Deci, 2002, 2000).

Autonomy is the need to control one's own behaviors and goals. Perceived autonomy tends to result in higher levels of intrinsic motivation, that is interest and engagement for enjoyment rather than for reward, and an increased sense of personal investment in learning. Learning and remembering tend to be higher when information is connected with interests and prior knowledge in meaningful ways (Malone & Lepper, 1987; Renninger, Hidi, & Krapp, 1992; E. A. Skinner & Belmont, 1993). Allowing choice can positively impact enjoyment and engagement, and increase perceived competence and willingness to attempt to tackle more challenging tasks (Cordova & Lepper, 1996; Deci & Ryan, 1987; Kamii, 1991; Schraw, Flowerday, & Reisetter, 1998). In game play, players are often allowed autonomy to make choices that contribute toward meeting goals.

Mastery involves curiosity, a desire to learn new skills and overcome challenges, and an opportunity to make improvements and gain competence. Mastery learning builds

confidence about abilities and knowledge, which can provide context for why learning matters as well as driving engagement in educational activities (Berlyne, 1960; J. Kagan, 1972; Malone & Lepper, 1987; White, 1959). Game play often involves challenges and opportunities to improve skills through repeated exposure.

Relatedness involves a sense of belonging and attachment to others. When learners do not feel isolated and form relationships with others in the same setting, they often view tasks more positively (Deci & Ryan, 1985). Playing games often involves social interactions with other players, and provides potential opportunities to build relationships and connections with others.

Collaboration involves a group working together toward common goals. In an educational context this often involves a focus on learning through interactions with others. Competition involves a person or group attempting to outperform others. It is important to consider whether activities are better structured in a cooperative or competitive manner to promote motivation and performance. There is a significant body of research on the benefits and drawbacks of cooperation and competition (e.g., see Deutsch, 1949; D. W. Johnson & Johnson, 1975, 1989; Slavin, 1983, 1996; Stanne, Johnson, & Johnson, 1999). Most of this research suggests that cooperation is more beneficial to motivation and learning than competition. Cooperation tends to facilitate performance, particularly in situations requiring individual accountability, mutual interdependence, face-to-face interaction, and regular self-assessment of team functioning (Gilles & Ashman, 2003; D. W. Johnson & Johnson, 1989; Slavin, 1996). Some researchers have also expressed concerns that competition can promote negative outcomes, such as interfering with other's progress and viewing others more negatively (Deci & Ryan, 1985; D. W. Johnson et al., 1981; Kohn, 1992; Vallerand et al., 1986). In an educational context, competition can be problematic when it becomes discouraging or demotivating to struggling students most in need of engagement and practice, especially if they feel there is no way to catch up to

those in the lead (Nicholls, 1984, 1989; Nicholson, 2013).

Competition can be a motivating factor for some tabletop game players, however, and some researchers have proposed positive effects of competition in terms of motivation or performance when rules are clear and fair and opponents are equally matched with realistic chances of winning (Burguillo, 2010; Malone & Lepper, 1987; Stanne et al., 1999). Baseball players in a study by Kolb and Kolb (2010) reported that a balance between too little competition and too much competition is best. With too little competition, players don't take the game seriously or put in as much effort, but with too great a focus on aggressive rivalry and competition, the game is no longer fun and pleasure is only found in winning, rather than in playing. Tauer and Harackiewicz (2004) found that intergroup cooperation, where individuals work alongside teammates to compete against opposing teams, appeared to combine the benefits of competition and cooperation resulting in higher intrinsic motivation and performance.

Preschool children understand the concept of winning and losing and are more likely to compare their performance with peers in competitive situations (Tsiakara & Digelidis, 2015). Competiveness is a topic of concern, as overfocus on relative performance can undermine intrinsic motivation, although Butler (1989) found this effect to be less pronounced for preschool children than for older children, perhaps because they had not yet developed clear conceptions of the abilities of themselves and others. While preschool children tend to be more optimistic and less influenced by previous performance than older children, they will often express frustration and anger when they repeatedly fail tasks (Stipek, 1984; Stipek, Recchia, McClintic, & Lewis, 1992), and may give up or reduce effort if they think they cannot succeed (Nicholls, 1989). Preschool boys tend to be more competitive than girls, but the level of competitiveness seems to depend largely on context (Tsiakara & Digelidis, 2015). For example, Weinberger and Stein (2008) found that groups of preschool boys were more motivated by competition than similar groups

of preschool girls, but these gender differences disappeared when the gender groups were mixed.

Teacher behaviors can impact student motivation (Brophy, 1986; Keller, 1983). Other theories of motivation relevant to games research include goal orientation (Ames & Ames, 1984; Corno & Rohrkemper, 1985; Elliot & Dweck, 2005; Nicholls, 1984; Pintrich, 2003), emotional attribution (Weiner, 1990), self-efficacy (Bandura, 1986; Pajares, 2003; Schunk, 1991), and self-concept (Chapman, Skinner, & Baltes, 1990; Wigfield & Karpathian, 1991). These theories can yield insight into behavior and motivation for playing as well as learning through games, though much of this research involves participants who are older than preschool age. It is possible that factors of motivation may be different for preschool children.

Early Literacy Skills and Games

Early literacy research is important in illuminating which skills would be most appropriate for literacy games at the preschool level as well as which game affordances might be most useful for teaching language content and reinforcing literacy skills. Despite a common misconception that oral language develops before text literacy, oral and written language often develop simultaneously as children learn about functions of spoken and written language through observation of and interaction with social contexts (Schickedanz & National Association for the Education of Young Children, 1999). Until recently, most literacy research followed a reading readiness model with little examination prior to formal skills instruction in early grade school. Under the currently prevailing emergent literacy model, however, literacy development is more typically examined as part of a continuum of skills beginning in infancy and developing over the course of a person's life (Connor, Morrison, & Slominski, 2006; Dickinson, 2002).

In general, preschool is a crucial period in terms of children's language and literacy development as they begin to make connections between spoken and written language. Children in literate societies typically begin to show interest in writing and spelling words between three and four years of age, but their literacy skills are highly variable. While some children leave preschool and enter kindergarten with highly developed early literacy skills, other students do not (Aram et al., 2014; Lonigan, Allan, & Lerner, 2011; Neumann, Hood, & Neumann, 2009; Tolchinsky, 2003). Variation in literacy skills of preschool children is likely to have an impact when playing games with groups of players at differing skill levels.

From a constructivist view, literacy development is shaped by home and classroom experiences as well as by books and other media. Emergent literacy skills including phonemic and phonological awareness, knowledge of alphabet letters and sounds, phoneme-grapheme connections, print knowledge and phonics skills are necessary for children entering kindergarten to succeed in learning to read and are predictors of later literacy proficiency (Blatchford & Plewis, 1990; B. T. Bowman, Donovan, & Burns, 2001; Longian, Burgess, Anthony, & Barker, 1998; National Early Literacy Panel, 2008; Olson, 2012; Puranik, Lonigan, & Kim, 2011; Strickland & Shanahan, 2004; Whitehurst & Lonigan, 2001). When children receive exposure to these foundational skills during early childhood, they are significantly less likely to experience serious reading difficulties later in life (Olofsson & Niedersoe, 1999; Snow, Burns, & Griffin, 1998; Storch & Whitehurst, 2002). Children who do not develop these skills tend to fall even farther behind their peers over time (Stanovich, 1986). Inclusion of these skills as aspects of literacy games could offer additional practice opportunities for young children.

Phonological awareness is the sensitivity to detect phonemes, the smallest independently meaningful units of speech. As they develop, children are able to detect progressively smaller units of sound within spoken words, moving from syllables to sub-syllables

to individual phonemes (Carroll, Snowling, Stevenson, & Hulme, 2003; Goswami, 2001). Phonological awareness also involves phonemic analysis, the ability to segment words into phonemes, as well as the ability to manipulate and blend phonemes together. Phonological and phonemic awareness are essential in developing the alphabetic principle of grapheme-phoneme correspondence, or the association between letters and sounds (e.g., Cardoso-Martins, Mesquita, & Ehri, 2011; Castles & Coltheart, 2004; Ehri, 2013; Muter, Hulme, Snowling, & Stevenson, 2004; Wagner et al., 1997), though this may be limited to children learning languages with an alphabetic writing system (Read, Zhang, Nie, & Ding, 1986). Play activities and games involving verbal interactions with individual phonemic units, such as sounding out letters and words piece by piece, can provide opportunities for phonological awareness improvement.

Letter knowledge is another important foundation for reading and spelling (M. Bowman & Treiman, 2002; Caravolas, Hulme, & Snowling, 2001; Levin & Ehri, 2009; Lonigan, Burgess, & Anthony, 2000; Tolchinsky, Levin, Aram, & McBride-Chang, 2012; Treiman, 2006). Letter knowledge includes connecting letter shapes with letter names as well as to the sounds the letter represents in written words (Levin, Shatil-Carmon, & Asif-Rave, 2006). Children usually learn to name letters first before learning letter sounds (Evans, Bell, Shaw, Moretti, & Page, 2006). Many letter names contain the phoneme that the letter represents, and children who know the name of a given letter tend to better prepared for discovering letter-sound correspondences and using this knowledge for word-decoding (Burgess & Lonigan, 1998; Evans, Shaw, & Bell, 2000; Foulin, 2005; Piasta & Wagner, 2010b; Sénéchal & LeFevre, 2002; Treiman & Kessler, 2003). Letter-name instruction alone does not seem to have much impact on improving reading ability without also focusing on letter-sound connections (Adams, 1990; McGeown, Johnston, & Medford, 2012; McGeown & Medford, 2014; Muter et al., 2004; National Institute of Child Health and Human Development, 2005; Roberts, 2003; Schatschneider, Fletcher, Francis, Carlson, &

Foorman, 2004; Share, 2004; Tunmer, Herriman, & Nesdale, 1988; Wagner et al., 1997; Walsh, Price, & Gillingham, 1988).

Games that give players opportunity to identify and select letters in context by name can potentially improve letter knowledge skills through repeated practice. Before they can learn to read, children need to recognize that print and sounds are related and develop an understanding that written symbols, letters, words, and sentences represent oral language (Ehri, 2005; Piasta & Wagner, 2010a). *Graphemes* are the smallest individual symbol units used in a writing system, such as alphabetic letters, ideographic characters, numerical digits, and punctuation marks. Graphic awareness relates to children's ability to discern graphic details of printed language elements (Lomax & McGee, 1987). This recognition of graphic details is important in developing the *alphabetic principle* of letter sound recognition. Developing the alphabetic principle in preschool years and gaining proficiency in letter discrimination, letter naming, and lettersound correspondences during kindergarten are recommended benchmark standards for literacy development (Copple & Bredekamp, 2009; Bush, 2001; Common Core State Standards Initiative, 2012). Children tend to follow a progression of phases as they develop alphabetic knowledge, relying initially on visual features of text, because they know little about written language and lettersound connections. Once children learn a few letter names and sounds, often for first and final letters, they begin to use these to recognize words. With experience, children learn more grapheme-phoneme correspondences and are able to use connections between letters and phonemes to recognize sight words (Ehri et al., 2001; Share, Jorm, Maclean, & Matthews, 1984). Games that provide students opportunities to recognize letters and word fragments such as prefixes and suffixes as well as speak them verbally could be useful tools for learning the alphabetic principle.

Phonics skills include decoding words by identifying letters and the phonemes they represent, recognizing rhyming words, and arrangement and blending of phonemes to spell

words (Adams, 1990; Byrne, 1998; Copple & Bredekamp, 2009; McGeown & Medford, 2014; Ehri, 2005; Stahl et al., 1998; Wolf, 2016). There is large variation in children's decoding and spelling skills between the beginning and end of preschool (Both-de Vries & Bus, 2010; Levin & Ehri, 2009; McBride-Chang, 1999; Puranik et al., 2011; Treiman & Broderick, 1998). Knowing the relationships between letters and sounds helps children to develop reading fluency, the ability to recognize familiar words accurately and automatically. When readers are weak in fluency, they must focus on decoding words instead of comprehending and expressing meaning—the true purpose of literacy. Games that give students opportunities to rhyme, construct words, or generally play with language also can help children to develop phonics skills and reading fluency.

Cognitive Factors and Games

Schemas are constructed long-term memory frameworks used to represent acquired knowledge about the world and manipulated to connect, organize, and integrate information in meaningful ways (R. C. Anderson & Pearson, 1984). Schemas represent information as a connected network of knowledge elements rather than as a list of definitions, and exist at many levels (Rumelhart & Ortony, 1976). For example, children construct multiple schemas for words, letters, letter shapes, and expectations of how a word might be spelled, pronounced and written (Ehri, 2005; McClelland & Rumelhart, 1981; Paas et al., 2003). Early readers rely heavily on foundational schemata relating alphabetic, graphemic, and phonemic information to process words. This processing of words in working memory leads to modification and connection of schema that strengthen connections for spelling, pronunciation, and definition. With time and many of these connective interactions, children develop new schemata for recognizing sight words (Paas et al., 2003). Game-based experiences may afford opportunities for young children to construct schemas and develop

cognitively.

In making developmentally appropriate game choices for preschool learners, it is important to consider both approximate schemas currently held by students as well as schemas that game play is intended to form. Israel (2008) found, for example, that repeated practice manipulating hands-on materials helped preschool children develop schemas for numbers and shapes. This implies that games used for early literacy consider the use of freely manipulable pieces that allow students to physically construct the structures they're learning about. Similarly, actively constructing schemas to make sense of letter-sound relationships requires that the students make numerous attempts in a variety of contexts for schema generation and deeper semantic processing (National Early Literacy Panel, 2008; Paas et al., 2003; Stahl et al., 1998). This deeper processing in the context of increased task engagement improves academic performance and information retention (Aram et al., 2014; Craik & Lockhart, 1972; Elliot & Harackiewicz, 1994; Garris et al., 2002). In terms of game selection or design, this means that children need to be provided with more frequent but shorter turns where they have the opportunity to repeatedly manipulate letters and sounds.

Early literacy learning tasks place heavy demands on working memory in the form of *cognitive load* (Castles et al., 2011; Carroll, 2004; Rohl & Pratt, 1995). Cognitive load cannot exceed working memory capacity, or learning is likely to be hindered. *Intrinsic cognitive load* represents working memory demands inherent to the material to be learned, and cannot be altered without reducing task complexity. Remaining working memory resources after the demands of intrinsic cognitive load are met may be dedicated to extraneous or germane cognitive load. *Extraneous cognitive* load is a negative factor representing working memory resources focused on distraction or on activities irrelevant to the task at hand. When extraneous cognitive load can be reduced through the use of good instructional design practices, working memory capacity can be freed for *germane*

cognitive load, or resources devoted to strategies for schema acquisition and automation (Chandler & Sweller, 1991; Sweller, 1988). As is the case with other media, it is reasonable to assume that game rules and game play can be structured to reduce extraneous load and scaffold players with germane load features which will facilitate understanding, knowledge acquisition, schema construction, and building of automaticity.

Automaticity occurs when cognitive tasks and skills are practiced and schemas become developed with gained expertise to a point where intrinsic cognitive load is reduced and tasks can be carried out quickly with little effort or conscious thought (Logan, 1988a, 1991). Unless early readers are able to automatize decoding skills, the intrinsic load of decoding will leave too little capacity for meaningful understanding, resulting in poor reading fluency and comprehension (Eldredge, 2005; Kuhn et al., 2010; Logan, 1997; National Institute of Child Health and Human Development, 2005; Samuels, 1994; Wolf, 2016). A significant body of research documents the development of automaticity in early readers for reading and decoding tasks. For example, Samuels (1994) proposed a general theory of automatic information processing in reading, Posner and Snyder (1975) studied working memory processes involved in letter recognition, Neely (1977) discussed information processing for lexical access, and Shiffrin and Schneider (1977) addressed processes involved in visual and memory search for letters and words. As automatic processes develop, children tend to progress from slow decoding and blending, to using onset and rime to aid decoding, to recognizing words as single units. Children with well-developed skills in recognizing letters and sounds also tend to be able to read words faster (Biemiller, 1977; Walton & Walton, 2002).

With the development of expertise and automaticity, cognitive load effects for novices and can reduce or disappear, it is valuable to consider cognitive load effects in the selection and design of games for classroom use. Timing of information and fading scaffolding techniques are critical for leaning new information. Providing realistic tasks that promote

schema construction, and gradually add new elements can help learners to process material with high intrinsic cognitive load until simultaneous processing of essential elements is possible. When learners have more working memory capacity available, worked examples and self-explanations can be provided as germane load and control can be shifted from instructor to learner (Gerjets & Scheiter, 2003; Kalyuga, Ayres, Chandler, & Sweller, 2003; Van Merriënboer, Kirschner, & Kester, 2003). As an example, the tabletop game *Clumsy Witch* (Kubesch, Nikisch, & Walk, 2011) incorporates this form of scaffolded design into a layered rule set that begins with core rules and adds details as previous layers are mastered.

Another important factor to consider regarding extraneous cognitive load when working with classroom games is that of seductive detail. The seductive detail hypothesis states that performance on tasks tends to be lower when details of interest to the learner, but irrelevant for learning are present (Harp & Mayer, 1998). Although learners may report more satisfaction and interest, seductive details can have a negative effect when material is related to irrelevant details (R. E. Mayer & Moreno, 2003). While most research on seductive detail has been in the realm of digital media, this principle and proposed solutions are likely to be applicable to non-digital experiences. For example, interactive pop-up features in picture storybooks were found to be distracting (Tare, C., Ganea, & DeLoache, 2010), pictures in storybooks have been found to hinder reading (Torcasio & Sweller, 2010), and decorations in kindergarten classrooms have been found to be distracting (Fisher, Godwin, & Seltman, 2014). Context is important in determining whether information is essential or irrelevant. Considering whether rules are directly connected with curriculum objectives, whether art and design elements could distract from critical elements, and whether toy-like game components could be distracting, may help teachers to avoid seductive details and other sources of extraneous cognitive load when using games in the classroom.

Social Constructivism, Discourse Analysis, and Games

Development is embedded in individual contexts and children internalize meanings for spoken language through activity and social interaction with others within a culture with shared goals, values, customs, and history (Vygotsky, 1930/1978). Cooperative dialogues are therefore essential to both the development of cognition and culture (Vygotsky, 1934/1986). Social constructivist perspectives focus on interdependence of social and individual processes in construction of knowledge. The unique perspectives of children and teachers bring multiple and co-created meanings within a social and historical context (Denzin & Lincoln, 2011; Gee & Hayes, 2011; Palincsar, 1998). Parent and teacher support have been consistently connected with young children's early literacy skills (Xu et al., 2014), and children, particularly from low SES backgrounds, demonstrate higher levels of development entering kindergarten when they receive high quality support from teachers and caregivers (Ramey et al., 2000).

Preschool children are in the process of developing social skills, and there can be differences in social competence (Santos et al., 2014). Playing tabletop games in groups where children interact and communicate with other people provides an environment for them to develop social and self-regulatory skills, as controlling one's behavior and emotions is a necessary component of playing tabletop games. Children are unique individuals with diverse backgrounds, educational needs, and motivational factors, including those that emerge from cultural or gender differences (Battle, 2009; Lancy, 2002; Van der Aalsvoort, Lepola, Overtoom, & Laitinen, 2015).

Gee (2008) takes a sociocultural approach to early literacy, viewing language and literacy as shaped by cognitive, social, historical, and cultural contexts. Humans are simultaneously both active producers and passive consumers of language and use language differently depending on purpose, function, and context. Social language describes lan-

guage beyond core grammar; emphasizing the ways oral and written languages are used in the context of socially situated identities and activities. Early literacy is not simply a matter of learning to read by direct instruction, but how children acquire social languages and genres in their homes, communities, schools, and other environmental contexts. Children learn skills such as phonics inside communities of practice. In addition to phonics skills, children also acquire socially situated identities, values, and norms (Gee, 2001, 2004, 2008). The social structure of organized play and games, particularly those of a cooperative nature, can provide a safe environment for exploring these social contexts and interactions.

Qualitative Pilot Study

In an exploratory qualitative pilot case study research conducted in fall 2013, the author interviewed preschool through first grade teachers and administrators about their teaching practices regarding tabletop games in the classroom, with particular focus on the support of literacy skills (K. Sydik, 2015). Analysis of findings revealed several themes. Individuals viewed games as beneficial for helping young children learn, and reported using games to reinforce learning objectives. They generally considered games as an effective way to teach social skills, even though the games often were more activities than formal games. Participants expressed a view that the hands-on nature of games increases student motivation and engagement, and repetition of key concepts in games aids learning. Interviewed participants also discussed their observations that students enjoy activities when they perceive they are playing a game and find the activity to be fun. They also recognized the importance of making sure games reinforce learning objectives and the critical role of teachers in facilitating games for children with dramatically varied social and academic skills. Participants viewed games as a good way for individuals and families

to connect, but many of them did not think families were playing tabletop games, though they did express beliefs that they were playing video games or apps. Particularly in the first grade, teachers did not see much room currently for playing games due to time and curriculum constraints, though some instructors tried to include game-like activities as part of their workstations. Overall, the findings from these interviews fit closely with existing research on literacy and play. Interestingly, views on competition were mixed with administrators seemingly more supportive of competition than classroom instructors (K. Sydik, 2015).

Potential Benefits and Challenges of Tabletop Games in Early Education

Because preschool children may struggle with complex problem solving, tabletop games in this age range should be relatively simple and have clear rules that can easily be explained by teachers. As preschool children tend to have short attention spans, games that can be played quickly with short times between turns and without game mechanics where children are eliminated from the game are preferable. Preschool children may, however, need extended time to think about the tasks required in games and may be particularly overwhelmed by games that use speed mechanics, this may especially be true for ESL students. In the case of literacy games for preschool children, finding games that teach and support practice for literacy skills without requiring higher levels of literacy as a requisite to game play is a challenge. Another concern in terms of game complexity is scoring. Preschool children will most likely find it difficult to perform scoring that requires adding points. To address this, a scoring track that provides visual feedback on progress can be used. This kind of scoring method should not be confused with the "race-to-the-finish" or "going-out-first" mechanism common in many young children's tabletop games,

and often more related to chance than skill. Player elimination rules are most likely to create barriers to learners in most need of practice and should be avoided where possible. In contrast, games based too heavily on luck are potentially demotivating to students who are performing well and may undermine learning goals.

In summary, board games may be most effective at facilitating literacy learning activities for preschool students when best practices such as the following are followed:

- Games may lead to increased engagement when they are connected to interest and prior knowledge in a meaningful way that is perceived as fun or playful.
- Games should be designed, selected, or modified with consideration for children's zone of proximal development and appropriate literacy benchmarks.
- Games with many short turns that provide frequent exposure and repeated practice can lead to increased learning, task automaticity, and skill mastery.
- Games should require deeper levels of processing of letter name, sound, and recognition tasks.
- Game play spaces should be constructed to encourage a sense of relatedness.
- Games that provide rewards may be more effective when the rewards are meaningful to players and clearly associated to required game skills.
- Facilitation of games should promote a safe, low risk environment where rules are clear, fair, and consistent and all players have a chance to win.
- Facilitation of games should avoid focusing on competitive comparison, particularly when this competition may be demotivating or interfere with learning progress.
- Games with brief play times and short waits between turns may be beneficial for children with limited attention spans.

- When games balance challenge to avoid both frustration and boredom, they are likely to be more effective at promoting early literacy skills.
- Seductive details in the design of a game can distract from learning by generating extraneous cognitive load.

(See Copple & Bredekamp, 2009; Chandler & Sweller, 1991; Deci & Ryan, 1985; Deterding et al., 2011; D. W. Johnson & Johnson, 1989; Malone & Lepper, 1987; Salmina & Tihanova, 2005).

Focus of the Current Study

The focus of the current instrumental multiple case study was to gain a broader understanding of the experiences of children and teachers playing three tabletop literacy games (*Appletters*, *The Super Why ABC Letter Game*, and *Tapple*) in a classroom setting at a university associated child development center. The study also examines affordances of tabletop games early literacy instruction at a preschool level, how these affordances shape experiences and behaviors of students and teachers, and informs best practices. Specifically, the following research questions were:

- What affordances are provided by tabletop games relevant to preschool classrooms?
- What can be understood about childrens' interest when playing classroom games?
- How do teachers connect literacy games to classroom curriculum and student interest?
- How do young learners, who are developing social interaction skills experience the social play of games?
- What are implications for best practices?

Definition of Terms

In this study, the terms *play* and *games* will primarily be considered from the perspectives of *participants*, however for the purposes of this study it should be noted that the researcher defines *play* as participation of active agents within a discourse space. The term *game* is considered by the researcher to broadly include activities involving rules that establish boundaries for the physical and conceptual ways players interact with the game and with one another and that provide feedback about how well players are performing within the context of the game. An extended discussion about the development of a similar definition of play and game can be found in J. Sydik (2016). *Tabletop games* were defined as non-digital or analog games, which often involve tangible components such as boards, cards, dice, and tokens. The term *affordances* as used in this study were defined as the desirable or undesirable qualities or properties of a game that define possible uses by players.

3 | Methods and Data Collection

The goal of the current study was to use a qualitative research approach to gain a broader understanding of the affordances of tabletop games for early literacy instruction at a preschool level and how these affordances positively or negatively impact the experiences of students and teachers. This research approach allows observation of experiences in naturalistic settings, and open-ended questions allow an opportunity for participant voices to be heard, which should yield important insights in terms of motivation, learning, and pedagogy. These insights can lead to deeper understanding of the needs of students at the preschool age range and of which tabletop game affordances are suited to meet those needs.

Qualitative Research

Qualitative research is a process of inquiry well suited for exploring a detailed and holistic view of social and human experiences and capturing participant understandings within the context of their experiences (Creswell, 2013b). Qualitative research is frequently used in the early education domain, because it is suitable for exploring experiences of young children and their teachers in the context of their normal classroom activities. Context is an important component of qualitative research because experiences do not happen in isolation, but as part of discourses and cultural systems that influence understanding (Gee, 2001, 2008). Consideration of participants' contextual and situational factors (Palincsar, 1998) as well as self-awareness and reflection is important in understanding meaning in qualitative research with a social constructivist lens where knowledge is considered to be

developed through interaction between individual and social processes (Creswell, 2013a; Denzin & Lincoln, 2011).

The purpose of case study research is to investigate one or more cases in order to gain insight into an issue. Case studies are "an exploration of the 'bounded system' of a case or multiple cases over time through detailed, in-depth data collection involving multiple sources of information rich in context" (Creswell, 2013a). Cases can be viewed as a single entity within a bounded system of research study (Merriam & Tisdell, 2016). Case studies incorporate data from a variety of sources including interviews, observations and documents analyzed through open coding and development of themes to provide an in-depth description of the case or system. The present study utilizes an instrumental case study design investigating multiple cases to gain insight into a central phenomenon. This study follows the case study approach detailed by Creswell (2013a), and was also influenced by Stake (1995). Carefully selecting cases provides an opportunity to show perspectives in multiple contexts. Multiple cases may serve to better illustrate a concept or give an impression of generalizability but have the potential for less depth than a single individual case study (Creswell, 2013b). For the present study, the central phenomenon being investigated is the experience of playing tabletop literacy games. The research site serves as the outer boundary for the research. The original research design proposed teacher's experiences and children's experiences as case boundaries. Because most of the children's and teacher's experiences were shared interactions, these proposed boundaries didn't fit actual experiences in practice. The bounded systems for the cases could be more accurately described by viewing individual play sessions as nested sub-boundaries within the overarching boundary of the research site. For this research, play sessions were defined as a teacher and a group of students playing a particular game together from when they start until they have finished playing.

Sample Selection (Site and Participants)

Using the two-tiered sample selection procedure detailed by Merriam (2009) the site where research was conducted was chosen using an opportunistic, purposeful, criterion sampling approach. The older student classroom (for students ranging from three to six years old) at a National Association for the Education of Young Children (NAEYC) accredited laboratory preschool was selected as the research site based on two criteria. The site was chosen based both as an exemplary site example and also on grounds of gatekeeper access. The research site serves as the outer boundary for the case study. In order to gain multiple perspectives about the experiences and affordances of playing literacy tabletop games in a preschool classroom environment, both preschool children and their teachers meeting the criterion of association with the older classroom at the research site were recruited using an opportunistic, purposeful sampling approach (Creswell, 2013a).

In total, there were twenty-nine student participants. Although gender and ethnicity were not factors for recruiting participants, demographic information and information on languages spoken in participants' homes were collected at the time of research. Sixteen of these participants were girls and thirteen were boys. Fourteen students were White, twelve students were Asian, and two students were Hispanic. All participants were fluent in English, though many were bilingual with Chinese, Korean, Spanish, or Vietnamese spoken at home in addition to English.

The research study also included eight teacher participants who played active roles in running classroom game play sessions. These teacher participants were selected because of their role as instructors for the older preschool classroom at the laboratory school. Most of these teachers were early education major undergraduate college students, and their teaching in the facility was part of fulfilling practicum coursework. In this role, these teachers acted under the supervision of one female and one male master teacher at the

facility who, along with the director of the facility, were also recruited for participation.

Procedures for the research were developed through discussion with the facility director regarding how to best implement the research in a manner least disruptive to the routines and curriculum at the facility. A copy of the University of Nebraska–Lincoln Institutional Review Board (UNL IRB) consent form along with description of the study were distributed by the director of the facility to classroom teachers who were given the opportunity for voluntary participation in the study. Copies of the UNL IRB consent form were also distributed by the director of the facility to the parents or guardians of all children enrolled in the older classroom, who were given the option to choose whether to give consent for their child to participate in the study.

Game Selection

The three games chosen for the research were *Appletters*, *The Super Why ABC Letter Game*, and *Tapple*. The first game, *Appletters* (Nathanson, 2009), is a simple tile-placement game. Rather than moving components along a track on a board, the primary mechanism of tile-laying games, such as *Brandon the Brave* (Zirm, 2013), and *My First Carcassonne* (Teubner, 2009) involves placing tile components onto a board or other playing surface (Solko & Alden, 2016f). In some cases, this placement of tiles may be used such that players construct a board on the table for use with other components. In *Appletters* (see Figure 1), players draw tiles and add them to the first or last letters of previously played words to form new words. If players are unable to make a word, they must draw additional tiles. The first player to use all their letter tiles wins. The game can be played quickly allowing the potential for multiple rounds and winners (Solko & Alden, 2016a). *Appletters* was chosen because children can actively engage with the letter tiles as hands-on manipulatives.

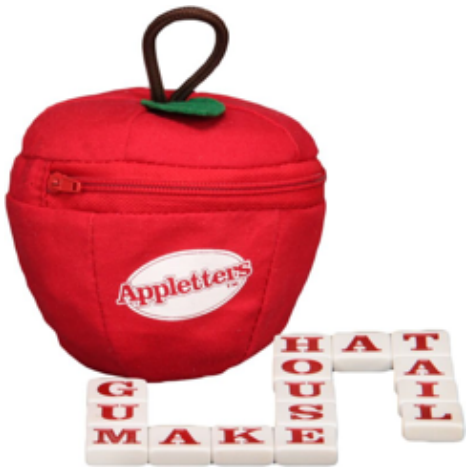

Figure 1: Appletters (Nathanson, 2009)

The second game, *Tapple* (USAopoly, 2012) (see Figure 2), is designed as a party game, focused on social and team game factors. Party games, such as *Charades*, or *Telephone*, are designed for larger groups of people, often in teams, and typically emphasize social interaction and creativity (Solko & Alden, 2016b). This potentially has important implications in terms of communities of practice and social discourse surrounding game play. In *Tapple*, a topic card is drawn each round and teams must successively give a single word answer matching the topic and press the key matching the first letter of that word before the timer runs out. Any team running out of time before tapping a letter is eliminated from the current round. The last team remaining collects the topic card (Solko & Alden, 2016d). Recognizing the first letter of a word falls in the range of developmentally appropriate literacy skills for the preschool age range (M. Bowman & Treiman, 2002). *Tapple* was chosen primarily to explore social interactions between children cooperating with their own team and competing against another team.

The third game, *The Super Why ABC Letter Game* (University Games, 2009), (see Figure 3) is a roll-and-move game. The term roll-and-move indicates a gameplay mechanism where a randomizing device such as a die, spinner, or card is used to specify the number of spaces moved (Solko & Alden, 2016c). For instance, several popular tabletop

Figure 2: Tapple (USAopoly, 2012)

games that preschool children may be familiar with, such as *Chutes and Ladders* (Milton Bradley, 1943) and *Candy Land* (Abbott, 1949) use a roll-and-move mechanic. Game design and research communities often perceive roll-and-move games negatively as relatively mindless because randomized movement reduces or eliminates player choice and tactical strategy. This might not have as much impact on motivation, however, if game players believe they are able to make choices impacting game outcomes. In *The Super Why ABC Letter Game* players spin a spinner and move pieces based on characters from the *Super Why* educational kids cartoon (Santomero & Alpert, 2007) along the board. Depending on the space where they land, players are given a task to complete. Tasks include matching upper case and lower case letters, matching pictures to words, suggesting rhyming words, and identifying initial letters for words. Players keep cards for successfully completed challenges. Once all players reach the finish, the player with the most cards wins (Solko & Alden, 2016e). Multiple levels of challenge cards give the opportunity for teachers to flexibly target individual children's zones of proximal development. Additionally, applying skills to earn cards in the game could be considered a worksheet or flash

cards in disguise, though children may or may not view the activity as such.

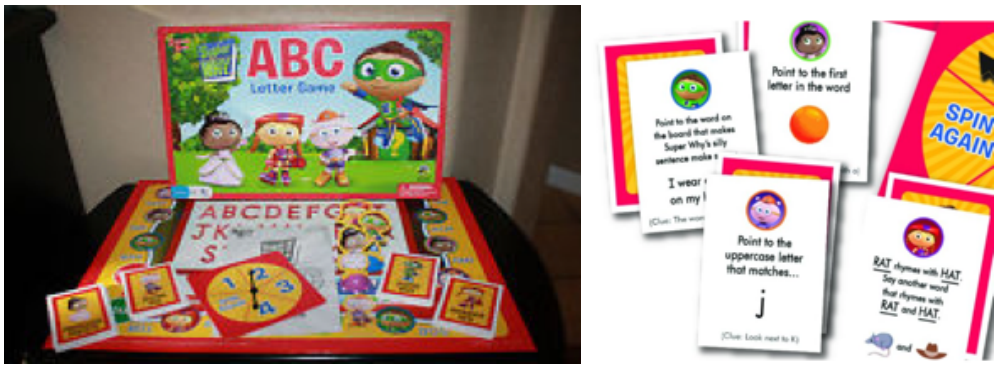

Figure 3: The Super Why ABC Letter Game (University Games, 2009)

All three games were commercially available (as of spring 2017), can be classified as children's or family games, and focus on developmentally appropriate phonics or literacy skills for a preschool age range (e.g. letter naming and sounds, rhyming skills, and naming words beginning with a given letter). Additional considerations for game selection included safety and durability of components, simple and clear rules and scoring, and relatively short play length (able to be played in 30 minutes or less). Short play time is better suited to the attention spans of preschool children (Ruff & Lawson, 1990; Sarid & Breznitz, 1997), and for multiple rounds of game play. Two potential games meeting these criteria in each category—tile placement games, roll-and-move games, and party games—were narrowed down with the assistance of the school's director to one game in each category.

While the three games chosen were among the most appropriate literacy tabletop games currently available commercially, not all aspects of the games chosen are ideal. The games were chosen with deliberate intention for exploration of a wide set of affordances in order to provide insight for game design and pedagogy in terms of what is good, what should be avoided, and what could be improved.

The director of the preschool also was queried about potential modifications to the games that might make them more developmentally appropriate or a better fit to the

curriculum and routines at the center (Heroman et al., 2010). Many of these suggestions, however were not implemented by the teachers in the study who were given the flexibility to control how they led their own game sessions.

The director's first suggested modification was to create boards with student's names or simple common words for students to match tiles in *Appletters*. A child's name represents an important and meaningful sense of personal ownership for many preschool children. Children have frequent exposure to their names and tend to be motivated to learn and write the letters in their own names earlier, especially the first letter (Bloodgood, 1999; Levin & Ehri, 2009; Both-de Vries & Bus, 2010; McBride-Chang, 1999; Molfese et al., 2011; Treiman & Broderick, 1998; Villaume & Wilson, 1989; Welsch, Sullivan, & Justice, 2003). Names play an important role in in developing print knowledge and early writing (Bloodgood, 1999; Diamond et al., 2008; Puranik et al., 2011; Tolchinsky et al., 2012).

A second suggested modification was to remove the *Super Why* character deck from *The Super Why ABC Letter Game* (the most difficult of the four task categories, focusing on sight word recognition), because of her judgment that most of the children would not yet have the skills to complete the tasks on these cards. The cards could be removed without altering the flow of the game and be reincorporated when children's skills have improved.

A third suggestion was to replace the electronic timer from *Tapple* with a longer-span sand timer. The electronic timer in *Tapple* is only ten seconds, and starts to make a louder and faster noise shortly before the time runs out, which she judged could add tension and stress in her view, although this feature is deliberately included by the game designers, this is targeted toward older players. While preschool children may be able to identify words in a category beginning with a specific letter of the alphabet, the time required for most children this age to accomplish the task would likely be longer than the time allotted

by the built-in timer. Large sand timers are already used in the classroom to explore time as well as to cue students about time for or between activities. These timers would allow students increased time for their turns and provide a familiar visual reference to estimate time remaining.

Adjusting curriculum to meet the needs of individual learners is recommended as a best practice in early childhood education (Copple & Bredekamp, 2009), and fits well with attempting to achieve a balance between roles of researchers and participants in a social constructivist research framework. Allowing modifications to the games to add positive affordances to suit classroom needs and improve game and learning experiences as well as to counter negative dimensions of the game design provides an opportunity to gain additional insights about classroom experiences of tabletop literacy games. In discussions about the games and rules, the researcher was careful to not give leading suggestions for modifications.

Data Collection

Sources of data in the study included participant observation and interviews. The researcher was present in the room during the game play sessions to record the play sessions and take notes, however the game play sessions were led by the teachers. The teachers established session lengths. While these were anticipated to last approximately 15-30 minutes per game play session, they trended more toward 20 minutes with some exceeding the 30-minute boundary. The purpose of the observation during game play and before interviews with participants was to gain additional information about the behavior, experiences, and interactions between children and teachers playing literacy tabletop games. The observation also allowed documentation of the dynamics of peer interactions, teacher-student interactions, and contextual factors that may impact the experiences of

playing the games. Game sessions were carried out in the older children's classroom at the child development center where students were typically from 4 to 5 years of age.

Time stamps and transcriptions were made based upon recordings of the game sessions and interview recordings for students and teachers. Twenty-three individual play sessions were conducted, consisting of initial and follow up play sessions and interviews with each game per teacher. Data collection took place across two classroom terms with some sessions occurring in the summer semester and other sessions occurring in the fall semester. The summer game sessions were carried out over a period of two to three weeks, and later in the fall semester another set of sessions were carried out over a period of two to three weeks. Sessions were arranged to best fit into schedules and routines at the preschool facility.

Study Procedures

Students' parents were asked to provide some basic demographic data on age, gender, and languages spoken at home. Prior to playing chosen table games with learner participants, the researcher demonstrated the literacy tabletop games to teachers at the end of a scheduled class session for the practicum course. After the demonstration, teachers had an opportunity to ask questions about the rules and mechanics of the games, and the written initial teacher-facilitator participant survey was given. The survey was designed to collect demographic information on age, gender, stage in program, and teaching experience. Additionally, the survey asked the following questions:

1. Tell me about yourself as a teacher and your teaching experience

   (In what age classrooms have you had practicums? What age range of students do you enjoy teaching?)

2. How do you define games?

3. Do you personally play games for enjoyment?
   (If so, please describe the types of games you enjoy playing)
4. What are your thoughts on language instruction in preschool curriculum?
5. What are your thoughts about play in preschool?
6. What is your opinion about tabletop games as a learning tool in preschools classroom settings?
7. Have you used games in the classroom previously?
   (If so, what benefits have you experienced? What concerns have you experienced?)
8. Do you have any questions about any of the games that you will be facilitating?

At a later date, fitting the schedule of the facility and teachers, the teachers played the games with student participants in small groups. During this time, the researcher took field notes, recorded the play experience, and was available to participate or answer questions if requested. Initial and Follow-up play sessions for *Appletters*, *Tapple*, and *The Super Why ABC Letter Game* were recorded and recordings reviewed with time stamps assigned and transcripts made for important or relevant game play experiences. Learner participants were interviewed in a small group about their play experiences after the initial and subsequent game play sessions about their experiences playing the games. Teacher-facilitator participants were also interviewed after the initial and subsequent play sessions. Interview questions for teacher-facilitators are intended to explore the teachers' experiences playing the game with preschool students, and to understand their teaching experiences and perceptions of the games in terms of appropriate preschool curriculum. A list of questions to be asked of students and teachers after the initial and second game sessions can be found in Table 1

Table 1: Initial Game Session Questions

Students	*Teachers*
1. Please tell me about the game you just played. (Probe questions: Have you played any games like this before at home or school? Was there anything about the game you thought was fun? Was there anything about of the game you thought was boring? Did you think the game was too easy or too hard?)	1. Please tell me about the game you just played. (Probe questions: Was there anything about the game you thought was fun or seemed fun to students? Was there anything about the game you thought was boring or seemed boring to students? Did you think the game was appropriately challenging for the students?)
2. In what ways is the game like or different from other things you do at school?	2. How does the game compare to other preschool activities? (Probe questions: In what ways is the game similar to other preschool activities? In what ways is the game different from other preschool activities? How does the game compare specifically to other literacy activities?)
3. Would you play the game again? (Probe questions: Why would you play (or not play) the game again? Is there anything that would be better to play instead?)	3. Would you play the game again with your students? (Probe questions: Why would you play (or not play) the game again? Is there anything that would be better to play instead?)
4. What was your favorite thing that you liked about the game?	4. What do you think are the benefits of the game? (Probe question: What are the benefits of the game for literacy instruction?)
5. Is there anything you didn't like about the game?	5. What do you think are the disadvantages of the game? (Probe question: What are the disadvantages of the game for literacy instruction?)
6. What could make the game better?	6. Would modifications improve the game? (Probe questions: Please describe any modifications you made from the original rules and why you decided to make them; Do you think the modifications improved the game experience in the ways you anticipated? After playing the game once with students, would you make any modifications the next time you play the game?)
7. Tell me about playing the game with your friends and teachers (Probe questions: How do you feel about following rules and taking turns? How do you feel about winning and losing in games?)	7. Please describe social interactions during the game among students and between teachers and students. (Probe questions: How did you interact with students during the game? Were students able to follow rules and take turns? How did students handle winning and losing?)
8. What did you learn from the game?	8. What did students learn from playing the game? (Probe questions: Why did (or didn't) the game seem like a good use of classroom time? Would you use this game again (why or why not)? How would you implement a game like this into the curriculum? What literacy skills did students learn?)

Data Analysis

The approach used in this study involves building themes based on responses from participants to semi-structured, open-ended questions in order to gather perspectives from

multiple participants. Creswell (2013a) informed the approach to data analysis in this study. Open-ended questions allow for inductive understanding of theory and experiences from the perspectives of participants themselves, which adds to the richness of qualitative inquiry. The aim of the data analysis was to answer the research questions. Meeting this end goal was a multi-step process using both inductive and deductive approaches. A combination of visual sorting methods, such as notecards, and software were used to sort and organize the data. The first step was to reread transcripts and review observations and to write margin notes and marking open codes at the sentence or paragraph level. The next step was to refine codes into themes by clustering similar conceptual categories together. This process was aided by using software to tag codes and organize similar concepts in a folder organization structure. Broad upper level theme categories were informed by the background literature and research questions, focusing on in-vivo language to describe the concept. Subthemes were built inductively, also using in-vivo language where possible. The codes and themes for the fall session were compared with the previous thematic findings from the summer session.

Validation Strategies

All forms of data collected in this study (interviews, observation field notes etc.) were triangulated. Thick, rich, detailed descriptions have been provided for the observations of the experiences of both the preschool children and preschool teachers (Creswell & Miller, 2000; Stake, 1995). Participant voices were included to the greatest extent possible through the use of in-vivo codes and themes and including direct quotes from participants to represent themes and subthemes. Peer reviewers familiar with qualitative data analysis were sought to establish inter-rater reliability by cross-checking codes and themes derived by the researcher. Initial drafts of themes and subthemes were also offered to

teacher-facilitators for verification and to better assure that participants' experiences are adequately and accurately reflected (Creswell & Miller, 2000).

Ethical Considerations and Reciprocity

All of the participants were treated in accordance to the ethical guidelines of the American Psychological Association (APA) and the University of Nebraska-Lincoln Institutional Review Board (UNL IRB). Although there are no identifiable risks for participating in this study, additional considerations should be kept in mind for research involving young children (Cambourne, 2003; Hatch, 2002; Mukherji & Albon, 2010). Caution was taken to ensure that the all participants were safe and comfortable. The director of the university preschool was consulted prior to research to discuss the project and how it could be implemented in a manner least disruptive and most beneficial to the center and child research participants. Participation was voluntary. All participants, or in the case of child participants—parents or guardians—were informed about the goals of the research project and its ethical dimensions, and asked to sign informed consent forms, including permission to record observations and interviews. Participants had the freedom to withdraw from the study at any point. Appropriate procedures were utilized to protect participant identity, and digital files associated with the research were saved on a restricted access, password protected computer. Participants were not compensated for their participation; however, copies of games used in the research were donated to the child development center as a gesture of reciprocity.

4 | Findings

The first part of this chapter consists of a review of methodology and a description of participants. Next, the play sessions for *Appletters*, *Tapple*, and *The Super Why ABC Letter Game* are discussed. The final section details emergent theme and subtheme findings from the research.

Methodology

The purpose of the current research is to gain a broader understanding of the affordances of tabletop games for early literacy in preschool and the experiences of children and teachers playing three tabletop literacy games, *Appletters*, *The Super Why ABC Letter Game*, and *Tapple*, in a classroom. Data collection for the study took place in two periods, with summer and fall semester groups. Data for both groups consisted primarily of recordings of game play sessions and interviews with students and teacher facilitators. Digital transcripts were made from the recordings, using pseudonyms to protect participant privacy. To better understand the experiences and perspectives of children and teachers playing the games, it is helpful to look at individual game sessions as case units. Lean codes were selected from the transcripts and arranged by conceptual similarity to discover emergent themes and subthemes. Informative quotes and in-vivo language reflective of the themes were noted.

Description of Participants

Teacher Facilitators

The research study included eight teacher participants who played active roles in running classroom game play sessions. Six of these participants (Lisa, Brittany, Mandy, Sarah, Jessica, and Abby) were senior pre-service teachers majoring in early childhood education. Some also had secondary majors including inclusive childhood education, elementary education, and psychology. In interviews, teacher facilitator participants expressed interest in using games to promote social skills and learning objectives as well as to increase student interest and engagement or to help teachers better understand their students' skills and interests. Two experienced teachers, Marlene and Terrence, also participated in the study. Marlene was the director of the school and Terrence the current head teacher in the older classroom. Both Terrence and Marlene were also involved with the teaching and training of pre-service teachers, which provided important additional insights.

Summer Session Students

The children in the summer session, *Elizabeth, Ann, Aaron, Gerald, Quinn, Emily, Jennifer, Sam, Jon, Maria, and Karen*, were "k-group" members of the older classroom who would be entering kindergarten in the fall with the exceptions of Aaron and Ann, who had recently completed kindergarten and were re-enrolled in the facility for the summer and would soon be in the first grade. All the children were either close to their fifth birthday or had recently turned five except for Ann and Aaron who were both six years old.

Fall Session Students

Students in the fall session were, *Claire, Amy, Peyton, Daniel, Levi, Elena, Tara, Diana, Caleb, Chloe, Gavin, Hailey, Paul, Keith, Keri, Julie, and Linda*. In the fall session, there was wider variety in age, with children ranging from 3- to 5-years old. Most of the children in the fall session were between four and five years old.

Demographics were similar between both sessions. There was a fairly even gender distribution in both summer and fall sessions. In total, there were sixteen girls and thirteen boys. Fourteen students were White, twelve students were Asian, and two students were Hispanic. All participants are fluent in English, though many are bilingual with Chinese, Korean, Spanish, or Vietnamese spoken at home in addition to English.

Play Sessions

In this section, play sessions with teachers and students playing *Appletters*, *Tapple*, and *The Super Why ABC Letter Game* together are discussed. The first game, *Appletters* (Nathanson, 2009), involves drawing and placing tile components to form words. In the second game, *Tapple* (USAopoly, 2012), a topic card is drawn each round and players must successively give a single word answer matching the topic and press the key matching the first letter of that word before the timer runs out. In the third game, *The Super Why ABC Letter Game* (University Games, 2009), players spin a spinner and move pieces along the board. Depending on the space where they land, players are given a task to complete. Tasks include matching upper case and lower case letters, matching pictures to words, suggesting rhyming words, and identifying initial letters for words.

Appletters

Session 1: All the letters were opposite.

This session was played in the summer and was led by the teacher Brittany with student players Elizabeth, Jennifer, Sam, and Quinn. It was the first time leading the game for Brittany and the initial time playing the game for student participants.

Brittany dealt picture word cards (See Figure 4) that she and another teacher Mandy created to each student and placed the letter tiles face-up in the center of the table, asking children to match game tiles to the letters on their card. This modification to the game was similar to the rules of *Boggle Jr.* (Parker Brothers, 1988), another literacy game already available in the games and puzzles center of the preschool classroom. Brittany encouraged the group to "See how many words you can spell." Children worked individually to finish the words on their cards and were dealt a new card when finished. Children struggled with matching the upper case letter tiles to the lower case letters on the cards. Elizabeth explained she found Brittany's picture word cards confusing because "All the letters were opposite. All these letters were lower case and the rest were upper case... so it was hard for us to find." For the second round, Brittany told the children to make their names using the letter tiles. Some children finished the task quickly while others took longer to complete the task. Students who finished first helped their peers who were still working.

Brittany relied on the game mechanics and components to serve as a form of reference model for the students to follow in making words, but this change decreased interactivity between players in the game. She considered player knowledge when planning for the game, creating picture word cards to help them make words, recognizing that they would struggle with spelling words. This is important when planning lessons, but it is also important to look at the design of the game itself, not just the exercise but evaluating game pieces and components for whether it will meet student needs, both in terms of

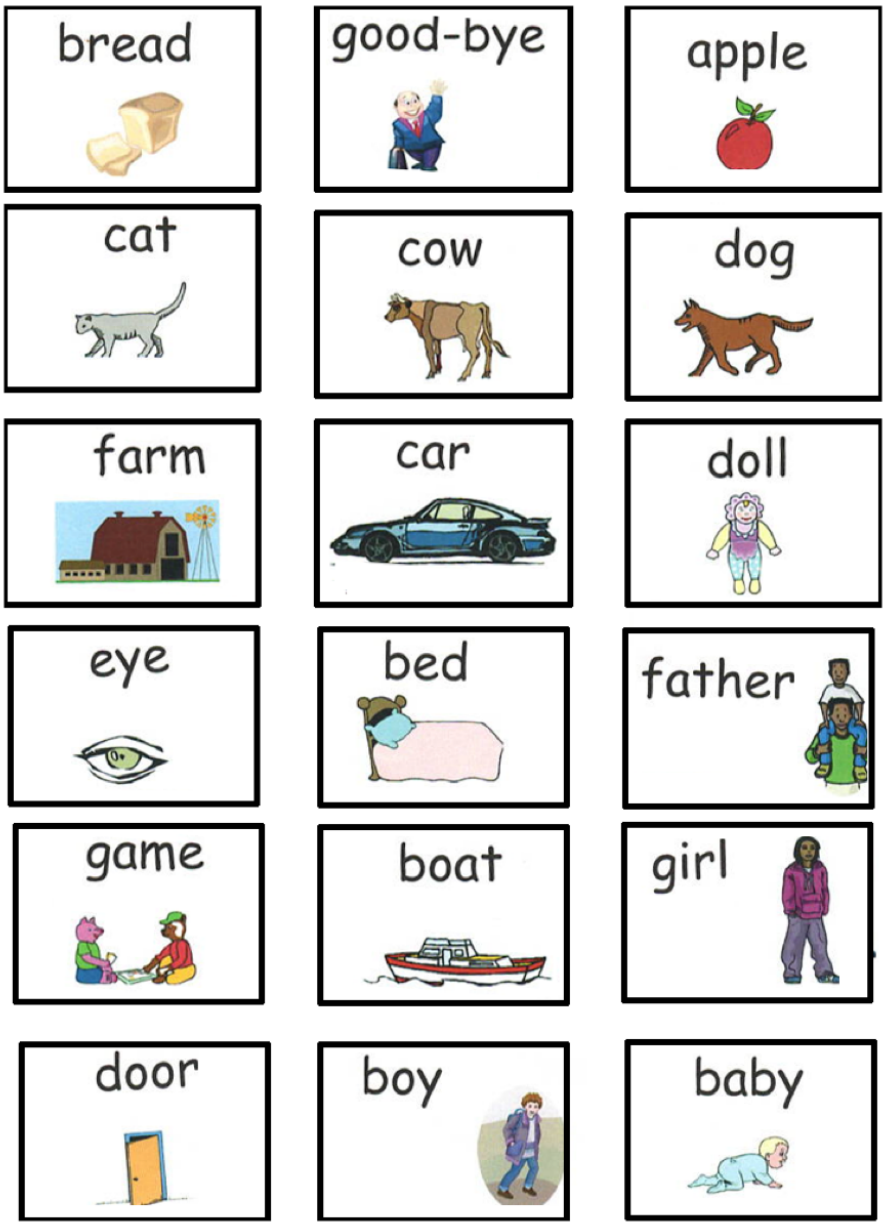

Figure 4: Picture word cards created by teachers Brittany and Mandy

whether it will support players in intended ways but also whether components may pose unexpected consequences, as was the case in this session with game affordances related to upper and lower case letter usage.

Session 2: From make your name to entomologist.

This session was played in the summer and was led by the teacher Lisa with student players Elizabeth, Emily, Gerald, Jon, and Maria. It was the first time leading the game for Lisa and the initial time playing the game for student participants. Lisa instructed players to make their names out of the tiles, encouraging children to call out letters that they needed and to help their peers find letters. Lisa related the activity to counting, pointing out how many letter tiles were used in their names. Some students tried to make a competition out of the number of tiles in their name, but Lisa downplayed this competitive aspect.

After the initial round, Lisa allowed students to choose the word they wanted to create. Children worked on building the word simultaneously and Lisa helped children sound out the words. Some children wanted to spell their last name, but had difficulty in finding the necessary letters, couldn't remember their last names, or didn't know how to spell them. Seeing students becoming confused or frustrated, Lisa intervened to begin a new round.

For the third round, Lisa asked children to spell their classmates' names. Most children did not have too much difficulty with this task, perhaps because the table had seating labels with the children's names that they could use as models. When students did have difficulties, Lisa responded by scaffolding them to sound out friends' names. After the children had finished, Lisa encouraged peer interaction to provide constructive feedback, asking her students to give one another positive feedback when their names were spelled correctly. Continuing with the topic of names, Lisa suggested that students construct teachers' names next, reminding them of several teachers' names.

For the next round, Lisa decided to attempt to connect the game to other aspects of the curriculum from earlier in the day, encouraging the children to work together to spell out the word entomologist. Some students balked at the length of the word, so Lisa

wrote it out on a small white board and asked them to sound it out and place letter tiles in front of the word.

By this point, the game session had lasted nearly a half hour and children began to show signs of boredom. In an attempt to regain their attention and interest, Lisa gave the children another opportunity to choose a word for the next round. The children proudly showed off the words they had created. Lisa challenged the students to work together to make a sentence using words on the table that they had already created. Gerald resisted, shouting "No!" and remarked that his letters were his, pulling them back, close to his chest. Lisa compromised by making a sentence out of the words already on the table and then turned putting the game away into a counting exercise.

Lisa used the game components of *Appletters* to push the limits of her student's zone of proximal development. She seemed to start light and simple in order to determine what the children were capable of, and then quickly added more difficulty when students succeeded at the increasingly complex tasks she gave them. Lisa appeared to adapt quickly and had a good grasp of her students' limitations. She seemed to be playing with curriculum herself and shifting her teaching, looking for new ways to use the game such as counting the number of tiles as one more learning experience while putting the game away before the end of the session.

Session 3: No! I'm Maria!

This session was played in the summer and was led by the teacher Lisa with student players Emily, Gerald, Jon, and Maria. It was the second time leading the game for Lisa and the second time playing the game for student participants. While Lisa expressed that the first session had gone well, she concluded that students had reached or exceeded their attention spans, and decided to set a fifteen-minute timer for this session. She began with a warm-up by asking the students to spell her name, and then guided the students to

build other names off of tiles already played in a crossword fashion. The students seemed to find this a little confusing. Jon suggested they should build classmate's names. Lisa agreed and instructed the other students to pass their letters around the table to other classmates, which led to some issues of ownership amongst the children as is shown by the following dialogue:

Gerald: "Now I'm Maria!"

Maria: "No! I'm Maria!"

Lisa: "Oh! But now you have different letters now. Jon, Let's start with yours. What letters do you have?"

Jon: "Elizabeth."

Lisa: "So can you spell Elizabeth's name for her? You can look at her name tag if you need to. You can lay it out in front of you so you know how to spell it..."

Maria: "Now I'm Jon! Here's a J and an N."

Lisa: "You got it? You need any help? And then Jon, I want you to try to figure out how to find a letter in both Elizabeth and Gerald's name."

Children's names often represent an important and meaningful sense of personal ownership for preschool children, and names often play an important role in early literacy development. Switching letters from one's name with a classmate may carry more than simply spelling different words as names are connected with self-identity, which teachers should consider.

Session 4: Where would you put your name?

This session occurred in the summer and was led by the teacher Lisa with student players Ann, Elizabeth, Jennifer, Sam, and Quinn. It was the second time leading the game for Lisa but the first time playing the game for most student participants. Lisa began the session with a familiar warm-up task, asking children to spell their names. She

made a second attempt at the exercise from Session 3 of building their names crossword style using already played names and asking children to look for shared letters. As an example:

Lisa: "Ann, is there any way that you could add your name to Sam's name? You might have to remove one of your letters and use one of his. So what letter is the same in Sam's name that you have in yours? [...] Where would you put your A to spell your name? Have you ever played a crossword puzzle?"

[Ann shakes her head no.]

Lisa: "Hmm. How about this? So one name will go this way and one name will go down... Ann used a letter in Sam's name!"

Sam: "It's like a cross!"

Lisa: "Yeah it is like a cross. Jennifer, is there a letter in Sam's name or Ann's name that you have in your name?"

Jennifer: "N!"

As in the previous session, Lisa asked students to swap their letters with friends to spell each other's names. The chime for the 15-minute timer sounded, however, so the children did not have an opportunity to continue. This time, the ownership concerns seen in Session 3 were not observed, but this may be because time had run out before these concerns could arise. Lisa led this session similarly to session 3, but did more to scaffold her students, asking if they had done a crossword before.

Session 5: Another approach to crosswords.

This session was played in the fall and was led by the teacher Jessica with student players Amy, Diana, Julie, Keri, Linda, Peyton, and Tara. It was the initial time leading the game for Jessica and the first time playing the game for student participants. Much as Lisa had done during the summer, Jessica was interested in exploring the crossword

approach to playing the *Appletters* game. She began with a warm-up exercise, telling the children to each take three tiles and see if they could make a word using their tiles. The children went around the table saying what letters they had drawn, however no one individually had a set of three tiles that could make a word, so Jessica told the children they would see if they could make a word together. She picked up a letter tile "A" and asked the children to name a word that started with the letter. Julie shouted, "Apple!" and Jessica helped the children to sound out and spell the word apple. Jessica instructed the children to draw three more tiles, to count them as they drew them, and to look at the letters they had drawn and see if they could make a word from them. Jessica added the word "Me" onto the word "Apple" in the center of the table, telling the children, "So the 'Me' goes this way, and the 'Apple' goes that way, so we're going to make words that go like this." The children worked together to build the word "Pig" off of the "P" in "Apple." Jessica told Julie, "I need your help. Look at these letters [in the word apple]. What letter do you want to start for the next word?" Julie chose L and Jessica told the students that they were thinking of L words. Keri shouted "Linda! [classmate's name]." Jessica exclaimed, "That's a great one, Keri. We can use our friend's names! Does anybody know what the second letter of Linda is?" Several children began calling out incorrect letters. Moving away from focusing on the crossword aspect of the game, Jessica moved more toward focusing on building names. She told the children, "Everybody flip the tiles so we can see all the letters. Who can go the fastest? Then put your big binoculars on [put her hands around her eyes] and look for the first letter in your name and put it in front of you." Each of the children correctly showed Jessica the first letter of their name, and Jessica used the activity as a wrap-up for the game, telling the children they could go play when they find the rest of the letters in their name. A few children stayed after the game had ended, continuing to play with the letter tiles.

Jessica recognized that connecting words in a crossword would likely be difficult for

preschool age children so she decided to modify the approach with this game mechanism, having the children work together to connect the words instead of individually. Although the strategy of working together to connect words in a crossword got off track in the game, Jessica effectively managed to use the change as a wrap-up activity.

Session 6: Apprehension and need for vowels.

This session was played outside on a bench on a nice fall day. The teacher, Terrence, led the game with student players Caleb, Chloe, Claire, Elena, Hailey, Levi, and Paul. It was the first time leading the game for Terrence and the first time playing the game for student participants. Terrence started the game by asking the students to each pick out three tiles and see if they could make a word with the tiles they had drawn. Only a few children had letters that could make short words. Terrence pointed out a few words that could be made with the tiles children had drawn, telling Levi, "You have a word! What word would that be? Eat [sounds it out]. You have eat." He also told Paul, "These two together can be or, O R," told Hailey, "You need a vowel," and remarked to Claire, "I know what you need. Does anybody have an I?" Terrence moved a letter I from Hailey's pile of letter tiles and told Claire, "If you add an I you have the word drift. D R I F T." Most children were not able to make a word with their tiles, however, so Terrence told the children they could draw more tiles to use in their words.

Seeing that children were having difficulty spelling words, Terrence changed the game. For several rounds, each child drew a letter tile and named a word that started with the letter that they drew such as "Bug," "Snake," "Apple," "Ice," "Umbrella," and "Elephant." When children couldn't think of an answer Terrence gave them hints, such as, "Think of something in your freezer," "What's something you use in the rain?" and "What's a big animal with a long trunk?" When children had played for about fifteen minutes, some of the children were starting to get antsy and indicated that they would

rather play on the playground than continue playing *Appletters*. Elena complained, "I don't want to play!" and Terrence asked her to sit down, telling her, "I'll tell you when we're done." To wrap up the game, Terrence told the children, "I'm going to let you go, but first I'm going to pick a letter for each of you and I'm going to ask what the letter is." Each of the students in turn correctly identified the letter Terrence had drawn, and he told them, "You can go play!"

Terrence indicated in an interview that playing *Appletters* was a struggle at first, remarking, "I think this is a game in my personal experience that kind of intimidated me...I wasn't very good at it in the beginning...Maybe it is kind of hard for that many kids to do it," adding that it would be better played in smaller groups of two or three children. It seemed that his apprehension with the game came through in the play session with the children. As shown in the play session, when playing games, it is important for educators to consider the number of players and how this may impact the game play. Although the session was below the maximum number of eight players recommended by the manufacturer of *Appletters*, when played with younger players the game may be more manageable with smaller groups of players.

Session 7: One's nonsense word is another's teachable moment.

This session was played outside on a bench on a nice fall day. Teacher Marlene led the game with student players Amy, Keith, Levi, Peyton, and Tara. It was the first time leading the game for Marlene, but the second time playing the game for student participants. Marlene stepped in to lead the outdoor game session on the spot when Terrence was called away, encouraging children to use the tiles to make words. Most of the children spelled nonsense words, but Marlene used this as a teachable moment to explore blended letter sounds. Marlene read the nonsense words aloud to the students, who proceeded to laugh and add letters to their "words" for Marlene to "read." The

children were clearly having a lot of fun with this activity but started to get a little out of hand. To keep the experience from going out of control, Marlene brought the group's attention back to the game by telling them to draw tiles and tell her which letters they had drawn. The children started stacking their tiles, counting as they placed them. Children suggested seeing which letters were on top of their stacks and knocking the letter tiles down. Marlene went along with their game change, exclaiming "Oh! I like that idea!" and the children all laughed as they knocked down their stacks and enthusiastically shouted the letters that were on top.

Instead of insisting that children construct "real" words, the teacher Marlene allowed the session to be largely child-directed and used nonsense words as a teachable moment. Although the game play was not at all like the official game rules, the session turned out to be a playful, fun, game learning experience. The session was not a matter of a learning activity instead of a game, but following what children wanted to with the game pieces and allowing a different game to emerge. The definition of game has roots in play, and Marlene's choice of going along with the children's suggestions in how they wanted to play with the game highlights the playful nature of learning through games.

Session 8: Can we be done now?

Teacher Abby led the outdoors game in the fall with student players Caleb, Chloe, Claire, and Hailey. It was the first time leading the game for Abby, but the second time playing the game for student participants. Abby began her game of *Appletters* by making the word "Him" with the children. Selecting the tiles in the word, placing them in order, and asking the children what sounds each of the letters made, telling the children, "Let's put all of these sounds together. What word does it make? Huh Ihh Mmm. Let's say it a little bit faster. Hhhiiimmm. Him." Abby put the tiles from the word him back in the pile and next picked out other tiles to spell out the words "Tin," "Hen," "Ten," and "Man," as

a group with the children. Abby asked the children to help find letters and identify letters and letter sounds in the words, but the children but didn't respond or interact much. The children clearly appeared bored about halfway through the twenty-minute game session and asked if they could be done playing. Chloe complained, "I'm getting cold!" Hailey added, "I'm bored!" and Claire asked "Can we be done now?" but Abby ignored their protests, continuing without modifications.

Abby was focused on educational instruction with the game session, using the tiles to model putting letters together to form simple, familiar, three letter words. The playful, fun aspects of the game, however, were not considered at the same level and the children quickly become bored and lost interest in the game session when they did not seem to perceive the game session as playful or fun.

Tapple

Session 1: What does the picture start with?

The teacher Mandy led the game in the summer with student players Elizabeth, Emily, Gerald, Jennifer and Maria. It was the first time leading the game for Mandy and the first time playing the game for student participants. Mandy dealt out the word cards with pictures that she and Brittany made (*Appletters* Session 1) to the children, and asked them, "What is this a picture of? What does it start with?" Children then pushed down the first letter of the word from their card on their turn and Mandy reset the *Tapple* game after each player had a turn. After playing several rounds, Mandy decided to play using the *Tapple* cards, flipping through the deck to find easier choices. Categories Mandy chose included "Vegetables," "Pizza Toppings," and "Dinosaurs."

When interviewed, Mandy stressed the importance of how the teacher facilitates the game. She commented that she decided to start out simple and then after a few rounds of practice decided to try using the *Tapple* category cards, though she found it challenging

as a teacher to quickly find cards that she didn't think could be too difficult for students. She decided to allow as much time as needed by students instead of using the *Tapple* timer because she thought it would overwhelm the children. She also remarked that she tried to give students support and hints in the game to connect letters with letter sounds. Social interactions between the students were limited in the game session. Mandy remarked that she deliberately tried to keep turns short to reduce student's impatience. Instead of going around until someone was not able to think of answers, Mandy let students go through once for each category so students did not have to come up with multiple ideas for each category or to find answers with more difficult letters, and she deliberately downplayed competitive aspects of winning and losing. Children seemed to enjoy the game experience, asking to play one more round when it was time to put the game away.

It seems clear in creating the picture cards to use with the game that Mandy considered the capabilities of students and attempted to find ways to support students as they played the game. While Mandy considered student needs and capabilities, it appears that she was less effective at assessing aspects of the game and game play, perhaps because these areas may have been less familiar to her. It may have been helpful for Mandy to look through the *Tapple* cards before the start of the game to preselect easier categories, or to consider possibilities for increasing social interaction without increasing turn length.

Session 2: Hands off until you're ready.

The teacher, Sarah, led the game in the summer with student players Jennifer, Quinn, and Sam. It was the first time leading the game for Sarah and the first time playing the game for student participants. Sarah began by asking children to press the first letter of their names. For the second round, Sarah instructed the students to press the first letter of their teachers' or friends' names. Instead of allowing the students to choose for themselves, however, Sarah assigned names. For the third round, Sarah brought picture

word cards that Brittany used for *Appletters*, saying, "I have these little card slips and you're going to take one out of the bag... pick one of them and you're going to press the first letter." Transitioning into organized play seemed difficult for the students, who were more interested in interacting with the buttons on the *Tapple* game.

Sarah demonstrated the process for the next round by showing the picture card for the word "Brother" to the students and noting that the word started with the letter "B." The children continued to find the first letters for the picture cards "Flower," "Dog," "Cake," "Goodbye," and "Bread." Although she had not used all the picture cards, Sarah stopped using the word cards and started thinking of her own word examples, which included "Lemon," "Monkey," and "Penguin." She emphasized the first letter sounds for the words as she gave them to the children.

Later, Sarah began to flip through and choose *Tapple* category cards. Chosen categories included "Sports," "Animals," "Food," "Toys," "Candy," and "Plants." Children were distracted and disengaged when it wasn't their turn, and became frustrated when letters they wanted to use were already pressed down from previous turns. Sarah reminded Sam to "please take your fingers off once you're done ... hands off until you're ready," and later reminded Quinn to "please stop playing with the game." To regain the children's attention, Sarah decided to relate the game to the millipedes and Madagascar hissing cockroaches they had learned about and touched earlier in the day, guiding the children to find and press the letters for the sounds in the word *Madagascar*.

The way Sarah handled the distracting toy factor of pressing the *Tapple* buttons provided an interesting contrast with the way this aspect would be handled by Terrence in sessions 5 and 6 where Terrence allowed children to press the buttons at the beginning and told children they would be allowed to explore and press all the buttons at the end of the game. Children wanted to press the buttons as part of their game play experience and this appeared to present extraneous load as well as distraction factors, which were

also apparent in other *Tapple* game sessions, but were not as prevalent when the children were given an opportunity to play with the buttons in a manner that was less distracting to playing the game.

Session 3: A Runza is not a breakfast food.

The teacher Mandy led the game in the summer with student players Emily, Gerald, Jennifer, Karen, and Maria. It was the first time leading the game for Mandy and the first time playing the game for student participants. Mandy began by asking students to "Think of something in this room, for example chair. Chair starts with "C" [...] what's something else in this room that starts with a different letter?" Children identified the first letter for their answers, which included "Picture," "Table," and "Door." For the next round, Mandy selected the *Tapple* card "Holidays" and decided to use the built in game timer but after trying it exclaimed, "Okay, that's really short!!!! We're not going to do it." For the next rounds, Mandy chose the categories "Boy's Names," "Breakfast Foods," "Desserts," and "Toys."

The category "Boy's Names" had ownership problems because it allowed the boys in the group to create their own name but didn't give the freedom for the girls to do the same as can be seen in the following example:

Gerald: "Oh... hard!"

Mandy: "You could do your own name."

Gerald: "I'm going to do Jon"

Mandy: "What does Jon start with?"

Gerald: "J!"

Emily: "J! Jennifer."

Mandy: "Jennifer is a girl's name. We could do Jerry, or Jason."

The teacher Mandy frequently dismissed children's answers when they did not match

her expectation. When Maria answered "Runza," Mandy dismissed her, saying, "A Runza is NOT a breakfast food." When Maria justified her answer by explaining, "Runzas have cheese," Mandy ignored her, saying, "How about bacon? What letter does bacon start with?" Mandy moved on to the category of "Desserts," but continued to dismiss answers when they did not match her expectations. This was particularly frustrating to the students when they gave examples of desserts and ingredients from their cultural backgrounds. For example:

Mandy: "Okay. Now we're going to do desserts. Cheesecake. What about... it's round and big and tastes sweet, what's that called? Think about something really cold."

Jennifer: "Popsicle."

Mandy: "Popsicle would be good, but I was thinking of something different."

Emily: "Ice cream."

Mandy: "Ice cream! What letter does ice cream start with?"

Emily (grinning quietly): "I did ice cream" [...]

[Mandy moves the Tapple *game to Maria]*

Maria: "ummm..."

Gerald: "Rice! Say rice!"

Maria: "Rice"

Mandy: "Is rice a dessert?"

Maria [frustrated :] "I actually think so!!!... [sheepishly] some... candy?"

By the end of the play session, the game had been running nearly a half hour and the children and their teacher seemed restless from being at the game table. When Emily remarked, "I like milk," a comment completely unrelated to the current category and did not even attempt to press a letter, teacher Mandy, sounding bored and disaffected, declined to challenge Emily's answer as she had done for student answers in previous rounds, simply

responding "Oh? Yeah..." After a few more brief turns, the game concluded.

When children's answers were rejected, they seemed hurt and frustrated and often reacted by disengaging with the game. The session illustrates the importance for educators to consider issues of personal ownership over imposing correctness on the answers to open topics as well as the potential implications of rejecting student answers.

Session 4: I'm going to give you "your" answer.

Teacher Jessica led the game in the fall with student players Chloe, Diana, Gavin, Peyton, and Tara. It was the first time leading the game for Jessica and the first time playing the game for student participants. The teacher got the children's attention by starting off with a song, "Open shut them, open shut them. Give a little clap, clap, clap. Do this with me. Give a little tap, tap, tap. Now hands in your lap!" then she gave a first letter example, asking the children what letter the word "Cat" started with. Next, Jessica chose the category colors, stating, "My color is going to be red and so I'm going to push it down on MY turn and you can push it down when it's YOUR turn." Most of the children had an opportunity to give a color and press the first letter for their named color.

A few children needed some help from Jessica. Instead of letting them give their own answers, however, Jessica provided an answer for some of the players. This seemed to frustrate the children and some of them lost interest in the game and disruptively pressed buttons. Jessica reacted to this with frustration, and when it would have been Elena's turn, Jessica told her, "We're going to skip Elena because she can't keep her hands off the table [...] you can have a turn next time."

The category was "Animals" for the second round and "Arts and Crafts" for the third. The children seemed to struggle to find appropriate answers and Jessica rejected several answers from children as unrelated to the topic. Chloe answered "Unicorn" as her

animal but Jessica rejected this, responding "Tell me a *real* animal please" Tara answered "Tomatoes" as a response to arts and crafts on her turn. Jessica rejected this answer, telling her, "You think arts and crafts and tomatoes? Think of something else!" Tara changed her response to "Necklace." Peyton responded, "I think of art" on his turn, but Jessica pressed him to be more specific, "But what do you think of?" to which he responded "Marshmallows." At first it seemed like Jessica was going to reject this answer as she had for tomatoes, but she paused and responded, "When we build marshmallow towers? Okay." Gavin mentioned "Caterpillars" on his turn. Jessica at first rejected this answer, but relented, "the ones when we made caterpillars, is that what you mean?"

Gavin blurted out "Tanadu" even though it was not his turn. Jessica, clearly confused, asked, "What is that?!!" Gavin responded that it was a fruit and Jessica asked if he was thinking about cantaloupe. She then reminded him, "Okay, but we're thinking of something that we can use for ARTS AND CRAFTS." Trying to get the children refocused and help them think of answers that would be more fitting for the category, she instructed the children to look around, offering "We've got straws over there." This attempt was not successful, however, and Tara blurted out giggling, "A banana!!" In response, Jessica replied, "That's not arts and crafts, silly... That one was tricky... Okay friends, one more category, are you ready?" For the last round, instead of a category, Jessica told the children, "I'm going to give you a word and you pick the letter it starts with," assigning each child a word such as "Run," "Snake," "Bat," "Cat," and "Hot."

Jessica seemed to have difficulty finding a balance between helping students come up with answers when they were struggling and telling them appropriate answers. As with Mandy in session 3, Jessica frequently rejected student responses she deemed as unsuited to the category topic. In fairness, many of the rejected answers did not seem appropriate responses to the topic, although students would sometimes give explanation that revealed the thought processes behind their response to justify their answers. This play session

highlights the value of creating dialogue about the intention of student answers and leads to a consideration for teachers about how strict and tightly to focus on whether responses fit the category card.

Session 5: Hard or easy one? What do you think?

The teacher Terrence led the game in the fall with student players Amy, Caleb, Claire, Daniel, Hailey, and Levi. It was the initial time leading the game for Terrence and the first time playing the game for student participants. Terrence started this round of *Tapple* game by showing the children how to press the buttons down and reset them. He let the children continue this warm up by experimenting with pushing down the letters for a short time and began the first round by giving them a letter to press. For the second round, Terrence gave each child a word such as "Jump," "Tree," "Run," and "Sheep" and asked them to press the first letter.

Leading off the next round, Terrence explained, "I'm going to use the cards and it's going to help us find some words... This time I'm going to try to use the timer with you guys and see what happens. What do you think?" Several children responded negatively to the idea of using the timer, however, so Terrance honored their wishes by leaving it out of the game. "Things at a Party" was the first category, but instead of going around the table and asking each student to give an answer for this category, Terrence flipped through the cards looking for a category for each student, giving each something different, resetting the *Tapple* board after each turn. Terrence's picks included "Sticky Stuff," "Fruits," "Vegetables," "Things at the Beach," "Colors," "Something on a Car," "Girls' Names," "Something in a House," "Something Round," "Something Scary," "A Reason to Celebrate," "Animals," and "Something Soft."

Terrence asked Daniel, "What's a girl's name like Hailey, what does Hailey start with?" Daniel responded, "Harold," matching the first letter, but Terrence told him "yeah, but

we want a GIRL's name." Claire asked for an easy one and Terrence let her continue the category of girl's names, letting her press C for Claire.

Terrence praised each child for correct answers, gave them hints if they had difficulty, provided feedback for incorrect answers, and occasionally gave reminders to not blurt out answers on other players' turns. Terrence encouraged both autonomy and taking risks to learn by giving the children a choice of hard or easy categories for their turns, adding extra praise when someone took the risk of trying a hard category. For example, when Hailey choose a more difficult card, Terrence exclaimed, "You want to do hard! Hailey likes the challenge!" At the end of the game, Terrence told the children, "Nicely done friends. Give me five! You did such a good job everyone!"

Compared to the way Mandy led the *Tapple* game in session 3 and Jessica led the *Tapple* game in session 4, Terrence seemed to facilitate the game in a much more child-directed than teacher-directed manner. Terrence's classroom management was effective at maintaining classroom focus, and he was able to support students with hints and guidance when they were struggling in a way that seemed to maintain student autonomy more effectively than some of the other instructors.

Session 6: Press all the buttons!

Teacher Terrence led the game in the fall with student players Caleb, Claire, Diana, Hailey, and Peyton. It was the second time leading the game for Terrence and the second time playing the game for student participants. As he had done previously, Terrence gave each student individual category cards on their turn. Terrence then flipped through cards searching for appropriate categories for each student, rejecting a few, and commenting "Ooh that's a tricky one!" Terrance chose the categories "Books," "Tall Things," "Vehicles," "Fish," "Musical Instruments," "Ice Cream Flavors," "Something Wet," "Emotions," "Toys," "Hobbies," "Something Green," "Games," and "Animals."

Terrence continued to praise each child for their correct answers, while providing support when they ran into difficulties. Recognizing the appealing toy factor of the *Tapple* board and that the children had resisted this temptation, Terrence finished the game session by encouraging them to go ahead and play with it, telling them, "Now push all the buttons you want to push! Push 'em all down!!!" Diana reminded Terrence, "This time I get to push all the buttons." Terrence agreed, "You CAN press all the buttons." Peyton exclaimed, "I want to press them all... that's what I want to do!!" Then Terrence told the children, "Alright, everyone count how many cards you have!"

Students, and even some of the teachers seemed to be excited about the *Tapple* buttons, treating them as a compelling, playful, interactive toy-like aspect of the game. This aspect of the *Tapple* buttons seemed to lead to distraction and disruption in many of the *Tapple* play sessions, however. Terrence considered this affordance of the game before children had started playing and allowed children to engage with this aspect in a productive way compared to teachers who discouraged children from exploring or playing with the *Tapple* buttons outside of the rules on their turns.

Session 7: Can I choose the category?

The teacher, Abby, led the game in the fall with student players Amy, Chloe, Elena, Levi, and Tara. It was the initial time leading the game for Abby, but student participants had played the game previously. Abby started the session by explaining, "I'm going to pick a card. So this card says 'Something Tall'. So Amy is going to pick a letter and she's going to say 'G' for giraffe, okay? Does that make sense?" Abby gave each student an individual category instead of going around the table much as Terrence had done in his sessions, but without the effort to personalize the category for the student. The first two categories were "Something Cold" and "Something on a Farm." Recognizing that Elena was much younger than the other players, Abby chose not to give a category, instead

asking if she could find the letter "T." The next category was "Vehicles," followed by "Colors." Elena disrupted the game by reaching out to press the *Tapple* buttons and Levi and Chloe joined in. Abby seemed frustrated by this and told them to stop because it wasn't their turn.

Instead of switching categories, as she had done previously, Abby told Elena to find another color name, but Elena exclaimed, "Diana is my friend!" and Abby let her use this as a category. Chloe had "Something Soft," but wanted to continue with names, shouting, "I want a *girl* one!" While Abby had allowed Elena to answer a friend's name earlier in the round, she did not allow Chloe to do the same, insisting that she give an answer for her category.

The next categories were "Heroes," "Games," "Things at a Grocery Store," "Circus," "Toys," and "Clothing." Abby wasn't consistent with the way she handled turns, sometimes moving on after giving a child a category and other times continuing the category to the next player's turn. Abby praised students for thematic answers and corrected those which didn't fit the category, telling Elena, "You don't get a camel at a grocery store!" and Chloe, "You don't wear an owl!" By the end of the game several children had lost interest in playing the game, wandering off to play with woodworking toys in another part of the room, which they seemed to find more interesting.

The teacher Abby considered the academic skills of her student players, but this session demonstrates the importance for teachers to also be aware of the social skills of players. It appeared difficult for 3-year old Elena to keep focused on the game both in this game session and in other sessions for all three games. Abby tried to work around Elena's lack of focus by skipping her turn, but this only had the effect of disengaging her entirely. Another consideration for the session is the difference between rejection and correction. Although Abby's responses could be considered a form of correction rather than rejection, children seemed to perceive her tone as harshly punitive. Giving players a chance to explain their

responses seemed to help with this issue.

The Super Why ABC Letter Game

Session 1: Playing on their own.

Having completed kindergarten the previous year, Aaron and Ann were considered by Teacher Mandy to be capable of playing the game on their own without teacher guidance. It was the first time playing the game for both players. She instructed them to play the game together while she played *Tapple* with some of their classmates and Brittany played *Appletters* with other classmates. The children answered tasks on the cards they had drawn matching *Super Why* characters. *Alpha Pig* tasks related to letter identification, *Wonder Red* tasks related to rhyming, *Princess Presto* tasks related to spelling, and *Super Why* tasks related to word identification.

Before either had reached the finish space, Brittany instructed the students to put away the game. Both players agreed that Ann would have won the game if the had played a couple more turns as she was closer to the finish line. Neither Ann nor Aaron mentioned having the most cards for correct answers. Both Ann and Aaron remarked that they liked the game with the characters from the *Super Why* cartoon, which made it more fun though they explained that some aspects from the show, like the *Super Duper Computer*, didn't make as much sense to them in the board game:

> **Aaron:** "I would probably change the middle."
>
> **Ann:** "[...] Because in the middle there's like the *Super Duper Computer* with all the Letters. It doesn't really make sense with the game. Yeah, but that's like in the show they put in the game. You say [...] move the letters out here but the *Alpha Pig* one says point to the upper case letters"

Ann and Aaron took opposite viewpoints about whether they liked challenge in the game, with Aaron commenting, "I liked reading the cards. [...] I know how to spell the

word out, read it now—like sound it out." In contrast, Ann remarked, "I didn't like that we had to learn some new words [...] and I didn't like knowing the new words," though she did comment, "I learned rhyming can be fun."

Session 2: Do you agree?

Teacher Sarah led the game in the fall with student players Ann, Jennifer, Quinn, and Sam. It was the initial time leading the game for Sarah and the first time playing the game for student participants. The game began with the task to find a word that rhymes with "Tap," "Zap" and "Map." Sarah reminded the children, "If something rhymes, it has the same ending with a different beginning" and tested the children by asking if a nonsense answer would rhyme. Children counted as they moved their pieces along the board, answering tasks on cards based on the character where they landed. Ann identified the word "Sun" on the board after attempting to read her card by herself. When Sam exclaimed that "Rock" rhymed with dog and log, Sarah asked the other children if this was correct and they answered "No!" Sarah asked the children again after Jennifer answered "Bog!" and the children agreed that it was a rhyming word. Quinn had the task of identifying the first letter in the word "Heart," but before answering, Sam and Ann jumped in with the answer and Sarah asked Quinn, "Sam says 'H.' Do you agree?" The chime rang and Sarah told the children, "Oh! There's the timer! Time to switch," although Quinn protested, "I don't want to do it."

The teacher Sarah used asking questions about agreement to individual students and the group as a learning tool. Her questions served as more than rhetorical questions, as she asked about agreement both when the answers provided by students were correct and when they were incorrect. This strategy of asking students about agreement seemed to help students who were struggling and seemed effective at keeping other students more engaged with the game when it was not their turn.

Session 3: Hear that? She's trying different letter sounds.

This play session was played in the summer, led by the teacher Sarah with student players Gerald, Emily, Maria, Elizabeth, and Jon. At the beginning of the game, when the children were choosing their game pieces, there were only four pieces for five players. Elizabeth shouted, "I don't have one!" so Sarah let her pick a piece from a basket of sparkly rocks in the classroom. Maria asked if she could have a sparkly rock instead of her current piece as well, but Sarah told her that she was already *Wonder Red*. Sarah instructed the players to place their game pieces on the start space and explained that Gerald would go first and "then we'll go around so then Emily, Maria, Elizabeth, and Jon. So you spin the spinner and then move that number of spaces so, for example, then you'd go 'one, two'." She also showed players the cards and gave an example card to show the kind of tasks that the players would be answering. *Alpha Pig* letter identification card tasks in the game included finding capital letters that matched lower case letters, *Princess Presto* spelling task cards in the game included pointing to the first letter in the word wall. *Wonder Red* rhyming card tasks in the game included identifying words that rhyme with "Pig and Dig," "Well and Bell," and "Bat and Hat." *Super Why* reading card tasks in the game included pointing words on the board that matched pictures of a "Top" and "Jar." When Gerald correctly identified "W" as the first letter of the word wall, he reacted with extreme excitement and enthusiasm exclaiming, "Whu whu whu whu Baby! Baby! Baby! Baby! W!!!!!! Boing! Boing! Boing!"

Emily decided to see what would happen if she spun the spinner board instead of spinning the spinner, saying "I spin like this!" Sarah showed her the correct way to use the spinner, and Emily flicked the spinner correctly. It landed on the border between two and three, and Emily remarked, "two," beginning to move her piece. Gerald challenged this, saying that she needed to spin again because "It landed on the middle." Sarah

responded, "She chose two. That's okay. Sometimes when it lands on the middle we can choose between two or three."

Gerald had the card task of finding a word that rhymed with the words "Well" and "Bell." Even though it was not her turn, Elizabeth stated, "Pell, Mell, Dell..." and Teacher Sarah told the other children, "Hear that? She's trying different letter sounds." She then gave Gerald the hint to "Try an 'F' in front of 'ell'," whispering the word "Fell" to him. On Jon's turn, he landed on "Spin Again" three times in a row and was becoming visibly frustrated, but finally the spinner landed on one and Jon moved his piece before the game ended when the timer chimed.

Sarah led the game session mostly by the official game rules. Even though the game seemed well organized, the children seemed to struggle with social skills. Most of the card tasks in the game centered on rhyming, and Sarah used the cards drawn by students as teaching opportunities for letter sounds and rhyming skills.

Session 4: Whoever has the most cards wins.

This play session was played in the summer, led by Brittany with players Aaron, Ann, Elizabeth, and Sam. It was the first time leading the game for Sarah and the second time playing for student players. As Brittany set up *The Super Why ABC Letter Game*, children were talking and not paying attention. The children had just finished lunch and another game was also being set up in the same room, which may have contributed to children's distraction. Brittany scolded them for this, saying, "I'm using my frustrated voice because you friends are not listening! Put your pictures on here. Okay, so we are going to spin the spinner, then whoever you land on is the card that you get to pick." The children quickly settled down and stopped talking and Brittany complimented them for their better behavior. Brittany reminded the children that when each player was done with their turn, they would pass the spinner to the next player and also to remember to

let players answer on their own turns.

Tasks in the game included identifying upper case versions of the letters "h" and "p," pointing to the first letter in the word "Hat" and the first two letters in the words "Chair" and "Snail," spelling the word "Jar," and pointing to the last letter in the word "Igloo." Brittany misunderstood this card, elaborating, "So what letter makes the Ih sound? Ih Ih Igloo." Other tasks included words that rhymed with "Hat/Bat," "Ring/King," "Saw/Paw," and "Car/Jar," as well as identifying the words on the board for pictures of "Sun," "Fan," and "Saw" on cards.

Brittany let the students keep their cards as points for correct answers and did not give the children cards for incorrect answers, although she did let Sam keep his card even though his answer "Lat" given as a rhyme with "Sat and Bat" was not a common, known word. At the end of the game, Aaron reminded Brittany about checking to see who won the game with the most cards. He was the winner for the game, with everyone else tied for second place.

Brittany gave students cards for correct answers. Terrence also gave students cards, but unlike Terrence, who gave cards to the children whether they had answered correctly or incorrectly, Brittany seemed to use the cards more competitively, using them to represent points for a scorekeeping purpose.

Session 5: They Both Say "Op".

The teacher, Jessica, led the game in the fall with student players Diana, Elena, Peyton, and Tara. It was the initial time leading the game for Terrence and the first time playing the game for student participants. Jessica started the game by telling the children to put their pieces on the starting space, reminding them that "green means go." She told the children that they needed to remember what color their player pieces were.

Card tasks in the game included identifying upper case versions of the letters "x,"

"y," "v," "u," and "t," identifying the first letters in the words "Orange," "Thumb," and "Wall," finding rhyming words for "Bag/Flag," "Mop/Stop," "Run/Sun," "Cap/Map," and "Dice/Ice." Jessica told Peyton to tell two words that rhyme with "Mop and Stop," but gestured with her hands and clapped in stating in a sing-song voice, "Mop. Stop. They both say op. [clap]" and asked the group of children to try to repeat the song and gestures with her. Other card tasks included identifying the words the represented the pictures for "Bell," "Jar," and "Top" and changing letters in words to make new words or changing words in sentences so they would make sense, for example, "This sentence says the cat flies at night. What if I changed the cah, cah, cah, cat to the B sound? What would that word say?" Instead of giving cards to the children as scoring tokens for correct answers, Jessica said, "I'll keep the cards that we use."

When children struggled with tasks Jessica asked them "Want me to help you?" Elena seemed confused about what she needed to do to move her piece, so Jessica helped her, telling her, "You need to move three spots. Put your hand on them. Ready let's move together, one, two, three. Okay we're there, let it go." While Elena tried to find the word that matched a picture of a top on the card, Diana became impatient, tapping Jessica on the shoulder and asking, "When is it my turn?" and when she was informed that her turn would come after Tara's turn, Diana sulked. In the middle of the game, Elena and Tara started singing the alphabet song. Jessica asked them to stop, saying, "Shhh can you girls be really quiet so I can ask Peyton a question? Thank you so much." Peyton spun and landed on the same space as Elena, which upset Elena who shouted, "That's my spot!" As a way of resolving this dispute, Jessica told Elena that is was okay for Peyton's piece to share the same space as hers.

Before the end of the game, many of the children showed signs of distraction. Elena, who was one of the youngest players at the table, seemed to have difficulty with many of the game tasks and keeping focused on the game. She started playing with her game

piece when it was not her turn, but Jessica told her in a scolding tone to leave it on the board "so we know where he's at." Tara also seemed to become impatient and lose interest while waiting for her next turn. When she started to fidget and lean back in her chair, Jessica instructed her to pull up to the table so she didn't fall or squish her friends. Peyton also was becoming bored with the game, exclaiming, "I don't want another turn!" Jessica responded, "We're almost done... Look how close we are to the end" Even though no one had reached the end space yet, Jessica told the children, "Okay friends. Time to get ready to go outside now."

Jessica effectively used gesturing and songs as a teaching technique during the game session to support literacy skills in the context of the game. This generally seemed to be helpful and effective, but sometimes children focused more on the songs as a mnemonic than on the card tasks. Children became frustrated and distracted between turns. Jessica seemed frustrated and impatient when children lost focus.

Session 6: We made it to the end.

Teacher Terrence led the game in the fall semester with student players Amy, Caleb, Chloe, Claire, and Levi. It was the initial time leading the game for Terrence and the first time playing the game for student participants. Terrence started out by asking and reminding each of the children which color piece they would be using in the game. Terrence was unfamiliar with the names of the characters in the game, so he used their physical descriptions instead, for example exclaiming in a silly deep voice, "You're at the PIIIIIG!"

Letter identification card tasks in the game included identifying upper case versions for the letters "a," "l," "e," "c," "w," "m," "v," and "x." For these tasks, Terrence frequently gave children hints about which letters in the alphabet were closest to the correct answer on the board. Spelling tasks included identifying the first letter in the words "Heart," "Elephant," and "Fan." Rhyming tasks included finding words that rhymed with

"Hat/Bat," "Saw/Paw," "Mat/Cat," and "Nest/Vest."

When children were struggling, or if Terrence seemed to think the task might be too difficult for a particular child, he would change the task on the card to make it simpler, for example from a word identification task to a first letter identification task. At one point in the game Terrence gave the opportunity to pick a different category asking, "Do you want to do something else?"

Terrence did not let children keep their cards as scoring tokens for correct answers, instead remarking, "You can put this card back on the bottom [of the pile]." He did, however, point out how close players were getting to the end space and after Claire reached the end told all the children, "You made it to the end! Good job that was a long game and we made it all the way to the end! You guys are good letter matchers!"

In this game session, teacher Terrence seemed to prefer a "first-out" game mechanism than using the cards as a form of point scoring. He downplayed competitive aspects of the game, instead focusing more on learning by giving hints to children and changing tasks when he thought they were unfeasibly challenging to students or when children seemed to be struggling with the tasks on the cards they had drawn. Children were engaged in the game and seemed happy focusing on literacy tasks rather than on winning the game.

Session 7: Everybody gets a point.

Terrence led the game with student players Amy, Chloe, Levi, Paul, and Peyton. It was the second time leading the game for Terrence and the second time playing the game for student participants. The game was played outside on picnic tables since it was a nice fall day. Levi wanted to have the *Super Why* token, bragging, "I'm the leader again... I'm going to be *Super Why* with the power to read!" referencing the character's catch phrase.

Card tasks in the game included identifying the letters "v," "u," "t," "s," and "p."

A few children incorrectly identified letters or struggled, but most children were able to identify letters easily, and Terrence commented to the children, "That was easy!" in response to letter identification tasks. When Amy had the task of identifying an upper case "T," Tara excitedly shouted, "That's mine! For my name!"

Other card tasks included identifying the first letter for the word "Mop," identifying rhyming words for "Bag/Flag," "Stop" and "Sun/Run," and pointing to words on the board that matched pictures on the cards. Terrence simplified these tasks, however, to pointing to the letters "B" and "T" on the board instead of pointing to the words "Bell" and "Top," apparently considering letter identification to be more developmentally appropriate for the children than word identification tasks.

Terrence praised the children for how well they were doing at taking turns and following the rules of the game, telling them "You guys are being very patient. I like how you're doing it!" He also gave the children information on the game length, telling them "We're almost halfway done" in the middle of the game and later that there would be one more turn and the game would be over. At the end of the game Terrence asked the children to count their cards. Each child counted their cards shouting, "I have four!" All players ended up tied with four cards, predominantly because Terrence gave each child a card on their turn whether they had correctly completed the task or not.

In a change from his first game session, Terrence chose to give students their cards after they had completed tasks, a change which children seemed to like. Terrence also provided signaling language in his second game session to cue the children that they were halfway through the game or close to the end of the game. This strategy seemed to be effective at reducing boredom and distraction with the children. Educators should consider these changes in terms of best practices. Giving children cards for completed tasks may have increased student excitement and engagement by giving them a stronger sense of ownership in the game, and providing expectations about game length seemed to keep

children focused on tasks.

Session 8: The game falls apart.

Teacher Abby led the game with student players Caleb, Claire, Elena, Hailey, and Peyton. It was the first time leading the game for Abby and the second time playing the game for student participants. The game was played outdoors after lunch on a sunny autumn day. After brushing freshly fallen leaves off the benches, Abby seemed to have a difficult time getting the children to settle down and start the game. She had to remind them to sit down several times as well as to intervene in a dispute between children over who would get to use a game token. Elena took Peyton's *Wonder Red* piece telling him, "I want to be a *girl*!!!" This upset Peyton who responded, "I want to be a *boy*—... but that one was *MINE*!!!!" Instead of clarifying which player token belonged to whom, Abby told both children that it was okay to "both use the same one" Both children reluctantly agreed to share the piece, apparently not considering how this would impact their progress along the game board track.

Letter identification card tasks in the game session involved finding an upper case "z." Spelling card tasks included identifying the first letters in the words "Stop" and "Nest." Rhyming card tasks included identifying a word that rhymes with "Drill/Hill." Reading card tasks included identifying the word that matched the picture of a "Rat" (though this was misidentified as a mouse).

Claire and Hailey remained focused throughout the game, correctly completing rhyming and letter identification tasks on their turns. However, perhaps in part because of the lack of rules and structure to define the play space, and perhaps partly due to distractions from other children on the playground, most children seemed disengaged with the game. On his turn, Peyton moved his piece randomly on the board. Instead of reminding him to count the spaces correctly, Abby ignored this. Ignoring his assigned task, Peyton played

with his game piece. Caleb jumped in, moving his hands all over the center of the board, incorrectly pointing to random letters, laughing.

Caleb placed his piece down on a seemingly randomly chosen space on his turn. At the beginning of the game Abby had seemed more interested and enthusiastic about leading the game session. As her control over the game decreased her motivation seemed to evaporate, and by this point, she did not seem to care about spinning or moving along the track and just let children answer questions based on the category of the space on the board they chose. Peyton removed his playing piece from the board and started playing with it and Abby told him, "I will take that piece if you play with it."

Before Abby had ended the game, Peyton, seemingly randomly, exclaimed, "I'm in heaven!" and left the game table to join other children playing outside on the playground. Elena followed him. Abby did not stop them from leaving the game before it was finished, and remarked to the group, "Should we do one more as a group?" Claire, who had been anticipating her next turn was upset and protested that this was not fair, Hailey also protested, though they both suggested several rhyming words in response to the last question. Abby concluded the game telling Hailey and Claire, "You guys are really good at this. Alright, you can go play."

The game session seemed to fall apart and Abby seemed to disengage when things were not working with the games session. One of the primary distinctions between free play and games is the need for structure and rules to define the game and the game play space. Inconsistencies with application of the rules and lack of structure in the session may have contributed to problems and disinterest in the game for some of the players. This session highlights the need for structure and rules in establishing an effective game space.

Emergent Themes

Ongoing data analysis of observations of game sessions and interview conversations with teachers and students led to the emergence of several themes. Considerations about games, rules, and components are discussed in the first theme, *"That's How Games Are"*. The second theme, *"How The Teacher Does It"*, considers the importance of developmentally appropriate practice. Motivational factors are discussed in the third theme, *"A Way to Keep Them More Engaged"*. The fourth theme, *"Things Kids Need to Know for Kindergarten"*, focuses on early literacy skills. Cognitive considerations are discussed in the fifth theme, *"Maybe She's Thinking"*. The final theme, *"A Lot of Teamwork and Effort"* addresses sociocultural concerns. A summary of themes can be found in Table 2.

Theme 1: That's How Games Are

Because games aren't a typical part of this classroom environment, issues related to how games are played, the components they're made of, and how their rules fit into a classroom activity emerged as a prominent theme with several subthemes. "We play a lot of games every day", relates to teacher's and student's general views of play and games and their views specifically about *Appletters*, *Tapple*, and *The Super Why ABC Letter Game*. *"I don't have any Zs"* relates to how student interaction and engagement in the classroom was influenced by design features of the games. *"Those were upper-case so it was hard for us to find"* discusses how differences in letter case and fonts impacted playing the games. *"Something with movement"* discusses concerns about limited movement in board games in comparison to most preschool activities. *"If I'd played by the rules they would be stuck"* discusses the modifications teachers made to games and their rationale behind modifications. *"You can change games if you don't like them"*, relates to game modifications suggested by student players. *"Please stop playing with the game"* discusses

Table 2: Summary of Themes and Subthemes

Theme 1: That's How Games Are (Play and Games)	
"We play a lot of games every day"	Views about games
"I don't have any Zs"	When game components limit identity
"Those were upper-case so it was hard to find"	Differences in letter case and fonts
"Something with movement"	Limited movement in tabletop games
"If I'd played by the rules they would be stuck"	Teachers' game modifications
"You can change games if you don't like them"	Children's game modifications
"Please stop playing with the game"	Distracting "toy" mechanisms
Theme 2: How the Teacher Does It (Developmentally Appropriate Practice)	
"We looked at millipedes today"	Bringing curriculum into games
"It helps me gauge where the student is at"	Games as formative assessment tools
"Stretching it"	Challenges and scaffolding
"Can you use a 'b' to rhyme with tap?"	Deliberate Mistakes
"It could definitely become a regular activity"	Implementing games In the classroom
Theme 3: A Way to Keep Them More Engaged (Motivational Factors)	
"Ooh I know that!"	Personal interest and ownership
"I'd choose pink"	Importance of choice in games
"I did it!"	Pride and excitement about learning
"Who has the most cards?"	Competition
"Knowing when the students are clocking out"	Play length and physical needs
Theme 4: Things Kids Need to Know for Kindergarten (Early Literacy Skills)	
"I got you! That's your name!"	Important role of names
"But P IS in millipede! You heard that P sound"	Letters and letter sounds in games
"It's the ending sound that makes the rhyme"	Rhyming in games
Theme 5: Maybe She's Thinking (Cognitive Considerations)	
"Sometimes we just need to take our time"	Time for cognitive processing
"Halloween we get candy"	Seductive details
"If they played it a couple times they could learn"	Learning through repeated practice
"One two three four"	Incorporation of counting and numerical skills
"Thinking outside the box"	Opportunities for creative thinking
Theme 6: A Lot of Teamwork and Effort (Sociocultural Factors)	
"So many helping hands!"	Peer helping
"I wanted to find it! You did it for me!"	Taking turns
"Interested in the other game"	Cross-game interactions

considerations for game components and strategies related to distracting "toy" elements.

Subtheme 1a: We play a lot of games every day.

Teachers in the facility tended to have a habit of referring to play and activities in the classroom as games, which may have influenced children's definitions of "game." Children gave broad definitions of games. Gerald remarked, "We play a lot of games everyday," a viewpoint echoed by several other children. Children additionally included activities and puzzles as forms of games including Maria, who remarked "When I didn't want a game, I choosed [sic] a puzzle... Puzzles are games too."

When asked if they had played games like *Tapple* before, Elizabeth responded, "No... we've never had letter games." Maria added, "Most of the games we do at school are with our body... or we do puzzles." Several children compared the games played to familiar board games. For example, Ann described *The Super Why ABC Game* as "kind of like a rhyming *Candy Land* game." Other games mentioned by children included *Chutes and Ladders*, *The Ladybug Game* (Copenhagen, 2004), and *Jenga* (Scott, 1983). Many of these games have a roll-and-move game mechanism. Noting this, teacher Abby stated, "I think [the students] adored [*The Super Why ABC Letter Game*] the most because they each had their own piece and could be moving it around so it was more like a game, at least in my mind."

While *Appletters*, *Tapple*, and *The Super Why ABC Letter Game* are games by definition, this did not mean that the children always experienced them as fun or playful, or that children would prefer to participate in other activities more than they would like to play board games. Aaron, for example, remarked he would rather go on a field trip. Other children commented that they would rather play outside. In several instances during sessions for all three games, children became distracted and showed signs of boredom or left the game space. As one example, Maria leaned back in her chair, sliding her body far under the table swinging her feet. Mandy reprimanded, "Maria. This is the alphabet

game now. Please stop kicking me. Please keep your feet under your chair."

When children perceived a game as disconnected from its roots in playfulness, this seemed to negatively impact their classroom experience. Sometimes children even expressed their disinterest in the game explicitly, for example Claire asked, "Can we be done now?" Hailey pleaded, "I'm bored! [...] Can we just go play now?!" Elena complained, "I don't want to play [*Appletters*]!" Similarly, Peyton remarked, "I don't want another turn [in *The Super Why ABC Letter Game*]," and Quinn remarked that it would be more fun to play a different game than *Tapple*, stating "I want to play a GAME right now," and teacher Abby commented "I don't know if [the students] really thought of [*Appletters*] as a game [...] that was probably the way I was doing it."

Although games are ideally rooted in play, it is interesting to note that the language used by teachers and students seemed to indicate that play and games were viewed differently, with play often referring to active free play. Often when children used the word "play," it was in reference to free play, especially outdoor play, as when Tara told Jessica "I want to PLAY!" during the *Appletters* game. The teachers also seemed to reinforce this view as Jessica, Abby, Terrence and Marlene all told they children they could "go play" now after the games had ended.

Most of the children, however, did seem to enjoy the games and find the games as a form of play or fun. When asked what she would change about *The Super Why ABC Letter Game*, Ann exclaimed, "Nothing. All games are fun!" Teacher Mandy recounted that children liked the games and when she told children to put the games away they told her "Wait! We want to do one more!" In several instances children continued to play the game or play with the game components as toys after the games had officially ended. Quinn wanted to keep playing *The Super Why ABC Game*, exclaiming, "I don't want to do it" when it was time to switch games, and children excitedly asked, "Do we get to play board games again today?!" When children were asked if they would want to play

Tapple again, Jennifer, for example, enthusiastically replied, "Yes!" Amy exclaimed that she would play again because the game is, "Fun! Fun! Fun!!!" and Gerald exclaimed, "Yes! We can play the game again?" Teacher Terrence noted that games were becoming an expected activity, saying, "I think they're looking forward to it... I've had a couple kids come up and ask me 'are we going to get to play a game today?' so... that was neat to hear because sometimes they do activities in the classroom... the same thing over and over again and they're not that interested but it was good that they were enjoying what they were doing."

Subtheme 1b: I don't have any Zs.

In relation to the nature of games, design features of games, as well as omitted features, emerged as an important subtheme. Design features of the games used in the classroom led to a number of concerns, both from a curricular point of view as well as in how they related to student interaction and engagement. The letters on the ring in the *Tapple* game did not include the letters Q, U, V, X, Y or Z. While all 26 letters in the English alphabet were included in the *Appletters* game, the distribution of letter tiles for less frequently used consonants was more limited than for vowels and frequently used consonants. In both cases, it seems likely that the purpose of the letter distributions was intended by the game designers as a simplification, but in practice, the game components undermined ownership for some players. As an example, Gerald pointed out with frustration that Z was part of his last name but he didn't have any Zs, and Quinn remarked "No! No Q. Go look on it [*Tapple*] ... I couldn't spell the rest of my name."

Omitted letters also limited student responses in other ways. Sam was told he could not give zucchini as an answer because there was no "Z," Claire and Caleb were not able to answer "Vampire" or "Van" for the Halloween and vehicle categories because there was no V, and Peyton wasn't able to answer "Umbrella" for the category of "Something

Wet" because there was no "U" on the *Tapple* board. These experiences provide lessons for educators to consider potential limitations provided by game affordances and how game affordances might provide obstacles to learning objectives or student engagement. They also provide lessons for designers of literacy games, particularly for young children to consider the implications of limited or omitted letters for a population where names are important in terms of ownership and beginning literacy.

Subtheme 1c: Those were upper case so it was hard to find.

Font issues emerged as another important subtheme related to the nature of games and how they are experienced in a preschool classroom. The students were typically skilled at recognizing both upper and lowercase letters, but were less experienced with making connections between upper and lower case letters or with recognizing these letters in different font faces. Differences between upper case and lower case letters or serif and sans-serif fonts sometimes caused confusion for children playing the games. When Brittany and Mandy created picture word cards for scaffolding the student experience, they used lower case text, while the tiles used in *Appletters* and the letters on the *Tapple* wheel were uppercase. This resulted in problems for some initial *Appletters* and *Tapple* game sessions, but interestingly, differences between upper and lower case did not seem to impact children on subsequent game plays.

During a game of *Appletters*, Elizabeth found the word cards confusing because "...all the letters were opposite. All these letters were lower case and the rest were upper case... so it was hard for us to find." In a different session, Hailey volunteered, "I have an M." Even though the "M" and "W" tiles did not look very different from each other, Abby informed Hailey, "Oh, this is really a 'W', but it looks like an 'M' when its turned upside down doesn't it? but that's really a 'W.'" While playing *Tapple*, Sam inadvertently discovered the difference between serif and san-serif fonts. When he paused to think of a

name, Teacher Sarah suggested, "We have Isaac I I I!" Sam complained that there wasn't an "I" on the board, missing that what he thought was a lower case "l" was actually a sans-serif upper case "I". The following dialogue illustrates this discovery:

Sam: "Doesn't i have a dot on it?"

Sarah: "What if I told you I could be made different ways."

Quinn: "Actually lower case i has a dot on the top and a lower case l just has a line."

Sarah: "Yeah, That's confusing. See these are all upper case letters."

Sam: "There's a dot with an I."

Sarah: "But that's with a lower case i."

Sam: "Then it's this and this." *[gestures making a serif I shape with upper and lower lines]*

Sarah: "Sometimes an upper case I can look like this, *[draws horizontal lines to turn it into a serif]* or like this. But in our game it's just a line. *[Points to the sans-serif capital I on the* Tapple *Board]* A lower case i is a line and then a dot. *[Draws lower case i]*."

These experiences provide lessons for educators and game designers to be aware that preschool children may have limited experience switching between upper-case and lower-case letters or may have difficulty distinguishing between letters. Teachers should consider whether modifications meant to help might become confusing due to incongruities with existing game components. Game designers of literacy games for a preschool audience should consider ability to easily identify and distinguish letters when making font choices for games.

Subtheme 1d: Something with movement.

Concerns about lack of movement in board games emerged as a subtheme related to the nature of games and how they are experienced. Both students and teachers in the classroom are used to participating in active experiences often involving movement. Teachers' concerns about active movement as well as doubt regarding students' familiarity with board games led to questions about whether board games would be an engaging experience for the students, but children seemed more familiar and comfortable with board games than predicted by some teachers. For example, Teacher Lisa cautioned, "Other [preschool] activities, I think a lot of them, the kids get to do more movement in them and they're not used to sitting down for a very long period of time... They're used to carpet time and that kind of thing but not used to sitting at a table." Teacher Mandy mentioned that *Tapple* required a lot of patience for children to "...sit and listen and wait for their turn" and teachers "only have so much wait time before the kids are messing around." She added that this might not be the case for individual activities like playing with play dough, where "they would each have their own chunk." Teacher Brittany remarked, "I don't think [*The Super Why ABC Letter Game*] would be as appealing as other hands-on activities like getting up out of your chair and building a tower. [...] You could tell toward the end...they're ready to get out of their seats and do something with movement."

Board games typically do not have much active movement. When using games for learning in a preschool classroom, teachers should consider limited attention spans for children in determining length of play sessions, and might want to give opportunities for breaks and movement between game sessions or incorporate movement into game play. Also, game designers for a preschool age range might want to consider ways to incorporate more active movement into games for a preschool audience.

Subtheme 1e: If I'd played by the rules they would be stuck.

Modifications made to games by teachers also emerged as an important subtheme related to the nature of games. Teachers made modifications to tailor the game experience to the needs of their students. Most modifications seemed to be intended to simplify children's tasks. For instance, none of the teachers decided to play the *Appletters* or *Tapple* games according to the official rules without making modifications. In the case of *Appletters*, the task of forming connected words was considered by teachers to be beyond the capabilities most of the children without teacher support. In the case of *Tapple*, teachers wanted to change the timer and "hot-potato" game mechanisms, remarking that children could identify first letter sounds, but might need more time for the task. Although there was some variation in the way teachers implemented *The Super Why ABC Letter Game*, they tended to make less modifications to this game than the other two, perhaps because the game design is more closely related to other games familiar to teachers and preschool students.

Modifications to Appletters. Teacher Terrence modified *Appletters* by instructing students to draw a letter tile and name a word that started with the letter that they drew, which is somewhat similar to the game mechanics of *Tapple*. Another modification he made was selecting tiles and having children name the selected letter. Teacher Marlene took a similar approach, telling students, "Each letter has a different sound" and asking students find matches between drawn letters and letters in student's individual piles of tiles and to provide letter sounds for selected tiles, and later enthusiastically incorporating students' suggestions to modify the game by stacking the tiles and name the letters that were on the top after children knocked down the stacks of letters.

Most of the teachers encouraged children to make words with their tiles, but deviating from the official *Appletters* rules, did not require students to connect created words

together. Only two teachers attempted to help children to connect words in a crossword. Lisa incorporated this mechanism when she led the game a second and third time. Jessica decided to have the students spell words together building other words off an initial word, remarking in an interview that she thought it might be too difficult for children to make words on their own. Instead of each child adding a new word on their individual turns, teachers typically had children create words either simultaneously individually or collectively as a group.

Many of the teachers encouraged children to use the *Appletters* tiles to spell their own names. Lisa extended this activity by asking children to swap the letters in their names and attempt to create a friend's name with the tiles. Word building with the tiles was not limited to name building by most of the teachers, however. Abby placed tiles needed to construct the words she chose to spell in the correct order, and asked children what sounds each of the letters made, though the children were not very engaged with the activity. Brittany modified the *Appletters* game to have students match letter tiles to picture word cards. Providing her rationale behind the modifications she made while playing *Appletters*, she explained, "I think [my modifications] made the game able to play. I feel like with this set of children that I had if we would have played rules by rules of the game they would have to learn those rules while they are playing, while dealing with the difficulty of trying to match the letters... maybe if we did the activity a couple more times I think that could work eventually, but the first time, with this group of children, I think it would have been too difficult for them to engage and actually interact with the game." She mentioned when she played the game again she might have children work toward specific words. Similarly, Lisa helped children spell simple words individually and work together to spell a longer word related to classroom curriculum. She also remarked that next time she played the game she would want to create a list of words for the children to spell. Marlene made the modifications of allowing children to use the tiles build nonsense

words, using this as an opportunity to teach letter sounds.

Modifications to Tapple. Unlike the official *Tapple* rules, most teachers chose not to use the game timer, preferring to allow children as much time as they needed to answer. Mandy attempted to use the game timer for one round, but after trying it exclaimed, "Okay, that's really short!!!! We're not going to do it." Terrence asked children, "I'm going to try to use the timer with you guys and see what happens. What do you think?" The children however, told him they did not want to use the timer in the game, and Terrence respected this decision. Sarah did not use timer in any of her sessions, but remarked that she planned to use it the next session as it might "get them up and their hearts racing so they'd want to do it more."

Jessica decided not to use any of the category cards that came with the *Tapple* game, and instead, "...just used things I think they have a lot, so like animals or even names or something like that." Most teachers, however, did use the category cards that came with the game, but curated the cards to choose categories that would be familiar for the children and skipped categories that might be too difficult. Mandy found the category cards that came with the *Tapple* game to be difficult, remarking, "I was just trying to glance through quick to find some easier ones and it was kind of hard to find easy ones, especially quickly." She commented further, "I think if I had played it in the way the rules went they would be really stuck and just guessing and wouldn't have wanted to play for very long." Terrence reflected, "Most of the commercial games typically seem kind of hard for preschool kids," elaborating that his teaching style is to read the rules and then "do what fits with the kids I'm working with and what they need... it's just natural for me to see what happens with the kids [...] I really liked how it was, I thought that the things they were asked to do were appropriate and you could look through the cards and pick out harder or easier ones so I don't know that I would modify it too much different."

The teachers approached giving the children categories differently. Several teachers

limited each category to one round so the students wouldn't need to work with more difficult letters or run out of ideas. Abby stressed that she thought it was best for all the children to have chance to answer each category, adding, "I feel like if one person got a really cool category and the next person didn't get one that they wanted...so that kind of gives them freedom... and I think they like it that way." Other teachers, particularly in the fall, however, preferred to give each child their own category card on their turn, resetting the game after each child gave an answer.

Mandy started the *Tapple* session using picture word cards, but regretted using them, saying, "I wanted to take away these picture word cards because all they were doing was just looking at the first letter of the word and so they weren't actually really thinking about what sound it makes or what the picture actually was." It is interesting to note that Mandy and Sarah had opposing viewpoints about the picture cards and whether they would use them again. Sarah felt that the cards improved playing the *Appletters* game, but Mandy found the picture cards less helpful for playing *Tapple*.

Modifications to The Super Why ABC Letter Game. Teachers modified *The Super Why ABC Letter Game* less than for they did for the *Appletters* or *Tapple* games. There was, however, variation in the way the teachers chose to implement the game. Sarah chose to ask other students about whether they thought answers given were correct or incorrect. Jessica used gesturing and songs to support game play. Sometimes different teachers had inconsistent interpretation and application of rules. Sarah told students to choose between two numbers when the *Super Why* spinner landed on a line and Brittany told students to spin again when the spinner landed on a line between two numbers. The children, however, did not seem to notice or be bothered by these inconsistencies, although children did protest about unfairness when they didn't get to play their turns.

In a few sessions teachers ignored the guidelines for two to four players and let additional students pick alternate objects to serve as player tokens for the game. This did not

seem to break the game play, but it did create longer time between player turns, which likely increased distraction for some of the players.

The biggest difference in how the game was played seemed to center around whether the teacher leading the game focused on collecting the most cards as points for correct answers or the first player to reach the finish space as the primary goal for winning the game. Aaron and Ann ended the game early before either player had reached the finish. When discussing who they thought would have won the game, both students focused on which player would have reached the end first and did not mention who had collected the most cards for correct answers. In his first session, Terrance also focused on reaching the end of the track as the end point for the game while in the second session he gave the children cards for tasks, which seemed to increase ownership and personal investment for the children. Other teachers used the cards differently. Brittany, for example, used the cards much more competitively as points for correct answers.

Modifications to games have the potential to better meet the needs of students, but also have the potential to introduce problems. Before making modifications to games it may be helpful for teachers to attempt to play games by the official rules to understand student capabilities and game features. When making effective modifications to games it seems important to consider factors related to developmentally appropriate practice, as well as factors of games such as rules and game components.

Subtheme 1f: You Can Change Games if You Don't Like Them.

In addition to teacher modifications to games, children also suggested making modifications to the literacy games. Elizabeth excitedly pointed out, "You can change games if you don't like them!" Maria suggested that Lisa close her eyes while the children built their names. Keith suggested stacking *Appletters* tiles and seeing which letter was on top and Levi suggested to Marlene that they should knock their tile towers down, exclaiming,

"Let's see which letter ends on top!" In response, Marlene exclaimed, "Oh! I like that idea!! We have to see what letter ends on top!" Amy asked if they could draw one more letter and stack it on top. Marlene agreed and all the children excitedly shouted out which letter was at the top of their stack, for example "I got U!" or "I got M!" with Marlene asking each child in turn, "Ooh, what letter do you have on top now? What sound does it make?" Levi suggested, "Let's knock them over and see what letter is on the top!!" Marlene told the children, "Okay, when I say 'Boom!' we're all going to knock it over and see what letter is on the top. You guys have letters stacked and ready. Knock it over for me to see. Ready? BOOM!!!!" When interviewed after the game Amy exclaimed that she had fun when "...we stacked the letters!" and Levi shouted "I liked knocking them down!!!" Levi also mentioned he liked making nonsense words in the same game session because, "It's so funny!!!!!" In another instance of children making modifications to games several children spontaneously began playing their own "game" activity combining the *Appletters* and *Tapple* games together. In another notable game modification Diana suggested that teacher Jessica should follow the official *Appletters* rules exclaiming, "We're supposed to make a snake!" She put her own letter tiles together to form a snake, although the letters did not spell actual words.

Subtheme 1g: Please Stop Playing with the Game.

A number of concerns arose related to use of game components in the classroom. Teachers frequently reminded children to put the *Appletters* tiles, and *Tapple* board in the middle of the table so their classmates could have access to game components. Children occasionally wanted to keep components to themselves, as was the case when Chloe hoarded a number of *Appletters* tiles, and Teacher Abby scolded her, "We're not fighting over these letters. You can't have them all by your side. Thank you. We need these in the middle of the table." Keeping components, however was not always discouraged, however,

and seemed to positively impact engagement when associated with accomplishment or ownership. Chloe remarked that the first time she played *Appletters*, "we get to keep the word at the end," but the second time she played the game "we don't keep it, we had to put them back," which she didn't like. Teacher Abby, who led the second game session, commented that she would "definitely do something different" next time, noting that she would let them keep the words that they build, because it "...gives them a sense of independence."

Children seemed particularly captivated by some of the toy-like components in the games. Sometimes, however, these toy-like game elements seemed to be a distracting seductive detail for students, rather than contributing to learning. Children frequently handled game components, such as the *Appletters* tiles, *Tapple* buttons, and *Super Why* tokens and spinners when it wasn't their turn. Teachers sometimes had to remind students not to interact with components on their turn, to keep pieces on the board, and they frequently warned students of consequences for playing with game components. As examples, teacher Jessica warned Elena, "Leave your person right there [...] Otherwise I'm going to ask you to leave the game," and teacher Abby warned Peyton, "I will take that piece if you play with it."

Tapple buttons were particularly compelling for students, and several teachers remarked how much the children liked to press them. For instance, Brittany commented, "I can really see the toy aspect of *Tapple*." Terrence explained that children tend to be comfortable with "something that they can really relate to and interact with that seems mechanical or modern [...] the kids really liked the idea of the buttons and pushing the game. That really generates a neat interest for the kids." Before starting *Tapple*, Terrence decided to "let them play with it at first... with how it worked... Just kind of give them a chance to have their fun with it" so children "could focus on the game after they got that initial curiosity out." He described this activity as, "a nice bridge to get them comfortable

with using it since they are so excited about it," so when they played the game, hopefully "it would go a little faster." This strategy seemed to be effective at reducing the amount of time he spent redirecting children from pressing buttons in a disruptive manner when it was not their turn. Other teachers spent significant time redirecting students from interacting with the *Tapple* buttons during the game. As an example, Sarah reminded Sam to "please take your fingers off once you're done ... hands off until you're ready," and later reminded Quinn to "Please stop playing with the game."

Once individual *Tapple* letters are pressed, they cannot be lifted without resetting the entire board. Children wanted to push letters up, especially when they had mistakenly pressed incorrect letters. Teachers had to remind students that once the letters were pressed they had to stay down and it was "okay to just leave it." Children were sometimes frustrated by limited options when beginning letter for their answers were already chosen, although this is an intentional mechanism of *Tapple*. On his turn, for the category of "Pizza Toppings" Gerald exclaimed, "Pineapple!!!!! Puh puh... Noooo!!" highly annoyed that the P was already pressed down. After taking a moment to think of an alternate answer he shouted, "Meat meat meat... Ham meat! H!" but became frustrated when he saw that H had already been pressed, lamenting "Whuu!?! Oh No! Why are all of them down?" Interestingly, this tended to be less of a concern for students in the fall session because many of the teachers decided to give children individual category cards on and reset the board between turns instead of going around the table with the same category.

Other concerns with game components included component and durability factors. Teachers creatively added extra game tokens beyond the four included which represented the main characters from the *Super Why* show for additional players. Adding more than the suggested number of players did not seem to impact game play, though it did increase the amount of time waiting between turns. The *Tapple* battery compartment cover fell off during the middle of one game session and in a few instances *Super Why* character

tokens came apart from the plastic base during the game. In a couple of game sessions *Appletters* tiles or *Super Why* cards were accidentally knocked off the table and onto the floor. When this happened, Lisa reminded her students to be careful, "We don't want any more to fall on the floor and then lose them." Because there are a limited number of category and task cards in *Tapple* and *The Super Why ABC Letter Game*, replay value may be negatively impacted. Strategies to overcome this might involve incorporating vocabulary from other classroom curricular content into the games as categories or tasks.

Before playing games with students, teachers should consider components that could potentially be distracting for children and plan for opportunities for students to explore the components in ways that are less distracting to game play. Teachers and game designers may want to consider durability of game components, as component durability is important for any board game, and perhaps especially so for classroom use with younger children. In addition, when a game is intended for instructional use and comes with specific content such as the *Tapple* or *Super Why* cards, it may be useful for designers to make additional content available or create recommendation documents to guide parents or teachers to create their own.

Theme 2: How the Teacher Does It

It seems fitting that developmentally appropriate practice for using games emerged as a prominent theme as the games were played in a classroom, where teachers have learning objectives and goals for children. Several subthemes related to curriculum and practice also arose within this theme. The first subtheme, *"We looked at millipedes today"*, relates to the ways teachers brought elements of classroom curriculum into game play. The second subtheme, *"It helps me gauge where the student is at"*, discusses how teachers viewed the games as a tool for formative assessment. The third subtheme, *"Stretching it"*, discusses children's willingness to embrace challenges as well as practices

teachers used to scaffold to support student learning. The fourth subtheme, *"Can you use a 'b' to rhyme with tap?"*, discusses the use of deliberate mistakes as a teaching strategy. The final subtheme, *"It could definitely become a regular activity"*, discusses teacher's thoughts about implementation of games in activity centers.

Subtheme 2a: We looked at millipedes today.

The ways teachers brought first classroom curriculum into game play was important. Some teachers brought elements of classroom curriculum into their game play when playing *Tapple* and *Appletters*. This did not occur as much with *The Super Why ABC Letter Game*, which had structured tasks and a more familiar game rules structure. Lisa helped the children work together in her *Appletters* session to spell the word entomologist, telling the children, "We learned about entomologists today. So we are all entomologists when we study bugs!" Also playing *Appletters*, Sarah reminded children that they had looked at millipedes and Madagascar hissing cockroaches earlier that day and had children sound out the letters in the words millipede and Madagascar:

Sarah: "Ooh! We looked at millipedes today. How about millipedes?"

Sam: "P!"

Sarah: "muh muh muh"

Jennifer: "M!" *[Sam presses M]*

Sarah: "But P is in millipede! You heard that P sound. Want to press it down?"

[Jennifer presses P]

Sarah: "Okay. Listen to the sounds in this word. Okay, ready? Madagascar."

Sam: "Madagascar!?"

Jennifer: "M!!"

Sarah: "There is an M there! But we already have M down."

Sarah: "I hear a D sound in Madagascar. What letter makes a duh sound?"

Jennifer: "D!" *[Presses D]*

[Sam is distracted and unfocused]

Sarah: "Sam, we're playing a game. Ready. We said Ma Duh gascar. We heard an M and a D. What about GAH scar? Guh Guh"

Terrence mentioned an example of something they had seen on a nature walk earlier that morning, noting, "We went on a walk and we saw a sheep. Shhhh sheep. What makes that sound?"

These examples illustrate how curriculum can be integrated into games. Integrating elements specific to the student's experiences can create a connection between what the students have learned outside the game. If the experiences outside the game are meaningful to the students this can add to student interest and engagement. When game objectives and curriculum objectives are aligned this tends to lead to more positive student learning outcomes, another important value for integration of game and curriculum.

Subtheme 2b: It helps me gauge where the student is at.

Formative assessment is an important consideration for determining developmentally appropriate practice. Some teachers mentioned literacy games serve them as a formative assessment tool. Lisa remarked "I think it helps me as a teacher to see where they're at in their spelling and writing...and if they had any misconceptions [...] They could look at it and see how it's spelled and they had to identify the lower case to the upper case which was interesting to see if they were able to. [...] It helps me gauge where the student is at" Similarly Brittany mentioned, "It would definitely help if teachers for documenting with Teaching Strategies GOLD so with letter recognition and knowing the alphabet and ... [letter] sounds so a teacher could really use that and play that game at least once or twice with all her students and chart where they are."

Subtheme 2c: Stretching it.

Issues of scaffolding and supporting students and pushing the boundaries of their zones of proximal development are other important concerns related to developmentally appropriate practice that emerged. Although Ann and Aaron, who had been in kindergarten the previous year, did play a round of *The Super Why ABC Letter Game* on their own without teacher assistance, the majority of the preschool children would likely not be able to play without prompting or game modifications by teachers. As an example, Jon was nervous about playing *The Super Why ABC Game* because as he stated "we don't know what the backs say!" In response Sarah reassured him "That's what I'm here for. I'll help you read it." Similarly, Maria was nervous about creating classmates names with *Appletters* tiles, stating "What if I don't know how to spell their name?!?".

When students did try to "read" cards themselves, they often relied on picture cues rather than words on the card. For example, Quinn held a card with a picture of a cow and remarked, "This says calf... This is a horse. This says farm! ... I know what it says because there's a picture." Sometimes the picture cues on the *Super Why* cards were unclear for students: Diana misidentified a picture of a wall as brick, and similarly Claire misidentified a picture of a rat on a card as a mouse.

There was a lot of variation on whether individual children found games too difficult or not challenging enough. Some of the skills were not challenging enough for advanced students, yet were more difficult for those with less letter sound knowledge. Children expressed a variety of emotions and opinions about the difficulty of the *Appletters* game. Some children seemed more eager to learn new information than others. Quinn said it was "hard for me," but "I was just not going easy on myself." Children were sometimes reluctant to embrace challenges, for example Gerald protested, "The word is BIG!!!!!!" when Lisa asked children to sound out the word entomologist in *Appletters* and at a

different point shouted "Whoa!!! Hard!!!" when told by Mandy that the next *Tapple* category was breakfast foods. Children seemed to rise to challenges, however, when they were encouraged and guided by teachers. When Terrence asked children if the wanted hard or easy category cards many students answered that they wanted hard cards, though a few children requested easier cards.

Most teachers saw the literacy tasks and skills promoted by the games as generally at a developmentally appropriate for preschool children, but teachers frequently modified game rules and components to fit their vision. Jessica noted that when the skills required to play games exceeded children's skill level "It wasn't necessarily boring, but it got frustrating so they didn't want to play anymore."

Teachers curated appropriate cards or categories that would be familiar for children and scaffolded or prompted children with hints when they were having difficulty completing tasks or coming up with ideas. Terrence agreed that he would play *Appletters* again, though he felt "it lends itself better to older kids than the younger ones." Jessica also thought that *Appletters* was too difficult for some of the children, commenting that it "was a little too hard I thought for the kids I had. I think if you had older preschoolers or kindergarteners they could probably spell more, but with the letters it was a lot for them. Even coming up with small words was really hard for them." Sarah remarked that [*The Super Why ABC Letter Game*] couldn't be played properly without an adult, "They can't read, so that's a disadvantage. It's a prompted game right now. You could probably give it to them alone and they would find a way to play it."

Teachers frequently helped or offered help to the children as they played the games.

Terrence: "See if you can make a word with your tiles. I'll help you."

Marlene: "Let's sound it out. You do it first, then I'll do it with you."

Sarah: "Do you need help?"

Mandy: "It was... hard for them to think and so I had to help them out."

Teacher's modifications to games were often aimed at reaching individual children's ability levels, though they would try to give enough challenge to push the bounds of student's zone of proximal development. One example of this was when Lisa helped the group of children playing *Appletters* to spell out longer words and make a sentence out of words, "We made one big word. Now what if we try to make a sentence [...] we can use each of our words. So we could say [...] there's a spider in the police car!"

Commenting on developmental appropriateness, Brittany thought *Tapple* would be best played "with older children who are a bit more ready for kindergarten." Regarding *The Super Why ABC Letter Game* she remarked, "It depends on the student... So for the kids that are going into first grade I think it was too easy... They would need more of a challenge but for the k-group I had today I think it was an appropriate game." She added that the game could be improved by adding "a challenging pile for the older kids, like spell the word instead of find it on the board, so we'd have all sorts of levels of difficulty." Jessica, who had younger students on average than Brittany, however, thought the *Alpha Pig* category of finding letters on the board and was appropriate, but thought some of the categories were too difficult for the children in her group. She remarked that she didn't even use the *Super Why* category, "The one that was finding the word on the board or changing the silly sentence was way too hard for them," adding, "I had to reread [the card] a few times to understand it... so I just had them find the word on the board and that was still too hard for them, because they don't know what the words look like yet." She also mentioned that the spelling category was difficult for the children and she "didn't have them come up with rhyming words unless I knew they could do it. I just gave them rhyming words and had them [identify the rhyming sounds] because that's more where we're at... finding the rhyming words I think was too much of a reach [...] So two of the four were good." Abby also mentioned if she played the game again she would probably omit the *Super Why* category, "that was just way too hard. Maybe they could pick a

different card or something," although she thought the other three categories worked.

Although several teachers modified game play in their own sessions to suit players of different ages and skill levels, a few teachers remarked that they would like to see more options for multiple levels of difficulty built in as part of the game. For example, coded cards for different difficulty levels of *Tapple* or more challenging *Super Why* cards, such as spelling words for older children. Because there is a large difference between the youngest players and older players, Terrence explained that he divided the groups by older group and younger group and found this division to be helpful because it was "comforting" for the younger children and he could provide challenges for the older. Brittany also mentioned dividing groups based on ability levels, "So it could be more challenging for older students." Mandy deliberately started *Tapple* with simpler rules, adding complexity after a few rounds, explaining, "I started it out simple like that and when I could tell that they were doing well with it [...] I decided to try it the other way just to see how they did." She suggested that *Tapple* could be adapted to fit the abilities of a wide range of ages by carefully choosing categories and modifying the rules: "Stretching it... I think that older you could start using more of the cards and then stretching out." She further commented that it would be nice if the category cards were "arranged in levels... If there was like a green, yellow, and red stack for easy, intermediate, and more difficult." Even if different levels of challenges are not built into games, it seems beneficial for teachers to adapt the game to guide students who find tasks confusing or overly difficult and to provide challenges for others.

Subtheme 2d: Can you use a 'B' to rhyme with tap?

Teachers' strategies of providing feedback to students and using deliberate mistakes to illustrate concepts emerged as a subtheme related to developmentally appropriate practice. When children incorrectly identified letters or letter sounds, incorrectly identified rhyming

words, or other mistakes their teachers often provided gentle constructive feedback. Gerald had spelled the word "Sun" in the *Appletters* game as "SNU," Lisa told him, "I see now you're spelling sun but you've switched two letters. How do you spell sun? Suh-Uh," and told him, "There you go!" when he switched the letters to the correct order. In *The Super Why ABC Letter Game*, Peyton answered "House" for the category "Something Tall," but stated that it started with the letter B." Terrence prompted him, "HHHHouse. B is buh. What makes the huh sound? H makes the huh sound. Can you find where it is [pointing] that's A B C D E F G..." Peyton responded, "It's H right here!"

Sometimes teachers made deliberate mistakes as teaching strategy. Playing *Appletters*, Lisa deliberately placed the T incorrectly at the beginning of the word entomologist asking, "Did I put it in the right space?" All the children shouted, "NO!!!" together and Lisa moved the tile to the end, again asking, "Now did I spell it right?" and the children answered yes. Similarly, in her *Super Why ABC Letter Game* session, Jessica tested her children by giving an incorrect answer, asking, "What about 'Mack'? Does that sound the same (as 'bag' and 'flag')?" The children recognized that this was not a rhyme and shouted, "No!"

Sometimes the children played with giving incorrect answers in a joking way as well. When Lisa asked Jennifer where she would put the other *Appletters* tiles in her name to connect with the N in Ann's name. Jennifer giggled and deliberately placed the letter in the wrong position, playing with control and the rules of the game. Lisa laughed and responded, "That would be kind of silly wouldn't it?" In another session when asked which letters she had, Amy laughed and told Jessica, "Let me show you my letters! S A T U V [incorrect letters]," but Jessica told her, "I know you know the actual letters, silly girl!" and Amy responded, "Yeah, the letters are actually T E S I N [correct letters]." It may be helpful for teachers to consider the balance between accepting incorrect answers with the need to teach students concrete information. When teachers and students jokingly

made deliberate mistakes or asked questions with incorrect examples it seemed that this perhaps gave a safe way to acknowledge mistakes and to provide concrete instruction in a less threating way.

Subtheme 2e: It could become a regular daily activity.

Routines and structure are generally considered to be an important factor of developmentally appropriate practice for preschool learners. Teachers generally liked playing the games, and remarked that they would see value continuing to play *Appletters*, *Tapple*, and *The Super Why ABC Letter Game* with students, especially if they could incorporate the games into their daily routines in the preschool classroom. Brittany felt that *Appletters* "could definitely become a regular daily activity, once you come in the room look through the letter chips and find this word. They're great little manipulatives especially if we added in some lower case tiles." While the utility and value of routines are well understood by teachers, this underscores the importance for designers of literacy tabletop games targeted toward a preschool audience to consider factors such as replay value or how games could fit in with daily preschool routines.

Theme 3: A Way to Keep Them More Engaged

When considering the experiences of children and their teachers when playing games, it is expected that themes would emerge related to motivational considerations. The theme encompasses several subthemes. The importance of personal interest and ownership is discussed in the first subtheme, *"Ooh I know that!"*. The second subtheme, *"I'd choose pink"*, discusses the importance of choice in games. The third subtheme, *"I Did It!,"* relates to student's pride and excitement about learning. The role and experiences of competition in the games is discussed in the fourth subtheme, *"Who Has the most cards?"*. The importance of teachers facilitating the games to be mindful of play length and physical needs is looked at in the final subtheme, *"Knowing when the students are clocking out"*.

Subtheme 3a: Ooh I know that!

Personal interest and ownership emerged as motivational considerations for preschool literacy tabletop games. Children became more excited and engaged with the games when they were able to mention or spell familiar things or things connected to their personal interests. For example, with a huge clap and grin, Gerald shouted, "Ooh! I know that ... It's a race car!" when teacher Mandy announced toys as the next category. Jennifer remarked that she found the category of dinosaurs to be fun, and Quinn regained interest in the game when he had an opportunity to relate his answer to one of his favorite stuffed animals:

Quinn (sitting up) : "I have a lion at home."

Sarah: "You have a lion at home?!? What does that... llllll lion"

Quinn: "No, I want to do the end of mine. And it's called Tigey. That's its real name... his real name is Snow Tigey."

Teacher Sarah discussed the importance of familiarity for the students and "picking out categories I knew [my students] would know more about... I'd like to think I know them." Because she could customize the game to children's interests, teacher Mandy thought it might be better to make up her own categories beforehand with familiar things: "I could see that being important... names... or toys or colors."

Ann remarked that she liked playing *The Super Why ABC Letter Game* because she "liked having characters. ... It's from a show, that makes it fun." Teacher Abby observed, "I think it helped that a lot of [the students] knew the characters...and I think that made it more fun...because when they knew who they were they were like I get to draw whoever this character is..." Teacher Terrence also mentioned that he liked the characters. Teacher Jessica on the other hand, commented that most of the children in her session were not familiar with the characters, and remarked, "Maybe if they knew the characters they would

have more fun with it."

While latching games onto familiar character and story elements may have the value of increasing interest and motivation for some students it comes with the caveat that teachers should be mindful that these familiar elements may have the potential to distract from learning objectives.

Subtheme 3b: I'd choose pink.

Factors of choice in games emerged as a motivational factor for preschool literacy tabletop games. When children had opportunities to make choices in the games, such as providing category examples in *Tapple*, choosing words to create in *Appletters* or choosing player pieces in *The Super Why ABC Game*, they seemed more excited about and engaged with playing the games. Maria remarked that she would like to have more choice and individualization of in the appearance of *Appletters* tiles, stating, "If we could choose our own color I'd choose pink." Children responded with enthusiasm playing *Appletters* when Lisa told them "think of a word in your head. It can be any word. Any word! [...] Oooh...you want to choose a classmate? Okay." Lisa noted that the children preferred to have a choice in the words they made while playing the game, "I think they really enjoyed doing their friends' names because that allows them to pick what they are going to choose the letters for instead of telling them what to do... so I think they really enjoy having a choice."

Terrence advocated providing the children with choices in how they would like to play the games. He frequently gave opportunities for children to make choices in the game, asking them about whether they would like to use the *Tapple* timer, whether they would prefer to answer a hard or easy question, and whether they would like to choose a different category than the one they had been assigned. Terrence mentioned that most of the other activities at the preschool the children are used to are open ended, and the children might

have more fun if they were given a choice about which activity they would like to do rather than being told what they were going to be doing. He remarked that he would put the games in one of their centers so the children could choose to play it. Brittany, however, did not think children would choose to play board games if they were placed in centers, either because they would not be capable of playing the games without teacher facilitation, or they would prefer to choose other activities in the centers.

Subtheme 3c: I did it!

Student pride in their accomplishments and excitement in learning emerged as a motivational subtheme. Children had pride in their accomplishments and were excited about learning. They showed excitement when they gave *Tapple* answers, made words playing *Appletters*, and correctly answered card tasks in *The Super Why ABC Letter Game*. Elizabeth cheerfully exclaimed that they should spell the word "Can! Because we CAN spell!"

Sam: "Let's spell something!"

Jennifer: "How about we try to learn to spell!"

Elizabeth: "How about we find all the letters there might be lots of letters!"

Jennifer: "Let's spell them!"

As they finished creating words with tiles, each of the children proudly shared words they had spelled:

Elizabeth: "I spelled something!"

Lisa: "What did you spell?"

Elizabeth: "I spelled mom."

Lisa: "Mom. Look it!"

Lisa: "M O M Yes, That's how you spell mom!"

Jon excitedly remarked, "I did it! I spelled police car!" when he spelled the words

with his *Appletters* tiles, Gerald excitedly exclaimed, "Wuh Wuh Wuh Baby! Baby! Baby! Baby! W!!!!!! Boing! Boing! Boing!" when he correctly identified the letter W as the starting letter of the word "Wall," Emily grinned hugging herself whispering, "I did ice cream!" when she pressed down "I" on the *Tapple* board as the first letter, and when Chloe correctly pointed to the upper case letter "X" on her turn she excitedly leaned back and shouted, "Yeah! Yeah!"

Most teachers provided praise and encouragement when children had correct answers or completed tasks. This seemed to increase student engagement and morale.

Brittany: "Perfect! You matched it! [...] Great job! You can keep that [card]."

Lisa: "I give you a thumbs up!"

Terrence: "That was a great one! That's a big word too! That's really neat!"

Abby: "You found it! Great job, I knew you could do it!"

Jessica: "Nice one! [high five] Good job!"

While acknowledgement of answers stimulated engagement and motivation, when children's answers were questioned or rejected by classmates or teachers, students became more withdrawn or frustrated, especially when plausibly correct answers were rejected. It may be helpful for teachers to attempt to find a balance between guiding children to provide more appropriate answers without undermining student motivation.

Subtheme 3d: Who has the most cards?

The role and experiences of competition in the games emerged as a motivational subtheme. Children seemed more interested in competition or winning and losing than the teachers were, and overall seemed to handle competition well, but there was some competitive conflict: Diana taunted Peyton, "Ha-ha! I'm ahead of him!" and Peyton responded, "No! She can't get more!" when Diana took the lead. There was some argument over who won games and Sam mentioned that losing games feels bad. Children

noticed and remarked when they were tied or in the lead in *The Super Why ABC Letter Game*, competed to spell the most words in a given time, and Maria suggested counting *Appletters* tiles, "Let's see who has the most letters, who wins." Abby asked, "What did we score?" and Levi asked, "But what is our prize?" after a round of *Appletters*. Aaron reminded Brittany about checking to see who won the game with the most cards:

Aaron: "Who has the most cards?"

Brittany: "Ooh that's right. Whoever has the most cards wins. Who has the most cards? ... Aaron has the most. You have three you have three and you have three ... so you are all tied for what place?"

Elizabeth: "Second place."

Brittany: "Second place! Awesome!"

The amount the teachers allowed or downplayed competition in games seemed to relate to their own views about competition. Some teachers encouraged competition. For example, Sarah thought that using the *Tapple* timer next time might "get them up and their hearts racing so they'd want to do it more." She also commented that she thought it would be possible at a future point to play *Tapple* as teams, adding, "I think it would be fun competition wise, but I'm a competitive person."

Brittany also did not see competition as entirely negative. She noted, "[Students] did pretty well [with winning and losing]. [...] When they were doing [*The Super Why ABC Letter Game*] I didn't notice them wanting to win, beat their friends. They wanted to just win that card, which has been different with the other games they had played." Brittany explained that the children liked keeping their cards in *The Super Why ABC Letter Game*, giving the example "Sam who is maybe just first getting experience with that type of knowledge you could tell he liked...seeing that he was right and getting to keep his cards." She remarked that it would have helped to have "different manipulatives other than cards as tokens or points or something maybe to get them a little more engaged that could've

helped a little bit like more reinforcement, like here's a coin or more than just a card for your point." She also emphasized that children seemed to enjoy the competitive aspects of the way she played *Appletters* with students, "I think something fun that they had with the game is that it was kind of a race. When they were trying to really focus on finishing that word and getting a new card...so I think they had fun with that... *game* aspect of it."

Other teachers attempted to downplay or reduce competitive aspects when playing the games. Mandy commented, "There wasn't really a winner or loser. I just let them all rotate through." Lisa, mentioned her opinion that learning is more beneficial when students work together, and wanted to avoid focusing on competition or points. Similarly, Terrence mentioned he did not like the winning and losing parts of games, preferring to focus on cooperation, and encouraging situations where all players can be winners, remarking, "As a teacher I believe it is important to encourage cooperation over completion in learning. I don't like the winning part about games. I'd like to let all children reach the finish so everyone can win." He noted that not keeping cards was a misunderstanding of game rules, but thought the change to the game rules works better for younger students to encourage each other instead of playing for cards. He would, however, play for cards with older students "who are more competitive and more able to handle competition."

Interestingly, teachers, even those who spoke negatively about competition in interviews, would occasionally use language when playing games related to competitive aspects and winning. For example:

> **Terrence:** "Let's see who's going to get to the end first! Give it another spin"
>
> **Sarah:** "Oh! There's a tie right now!"
>
> **Jessica:** "I need you to keep [your player piece] in your brains and remember it, because you don't want to move a friend's piece because that won't help you win."

Subtheme 3e: Knowing when the students are clocking out.

Teacher facilitation of games emerged as a subtheme, especially in relation to play length and physical needs concerns. The first time Lisa and Sarah played *Appletters* and *Tapple* the game play session lasted over thirty-five minutes, which is a long time for preschool age children. Perhaps since these teachers had not had much prior experience leading board game sessions with preschool children, they did not have positive expectations for the children's attention spans when playing the games. Children showed signs of restlessness and disruptive behavior after they had been playing for an extended length. Maria kicked other children under the table, Gerald climbed on his chair, Jennifer fiddled with markers, Sam sang to himself, and Quinn laid his head on the table only engaging when it was his turn. The next time these games were played the teachers set a 15-minute timer and switched between games during the session. Children did not seem as distracted with the shorter game length, but sometimes were still engaged in playing the first games and did not want to switch games. The ideal length seemed about 20-25 minutes. When asked what they didn't like, children from the initial *Appletters* session with Lisa commented about the game length:

Sam: "No! [he wouldn't play the game again]... Because its super long!"

Elizabeth: "It took a long, long, time."

Gerald: "It seemed boring."

Elizabeth: "It wasn't boring, it was just really long."

Gerald: "No, it was boring. Jeez!"

Children became frustrated and less engaged in playing the games when their physical needs were not met, and asked for water, food, or rest:

Maria: "I'm thirsty! Can I get a drink?"

Sarah: "When we all get done, we can go get drinks at the water fountain, okay?

Because I'm thirsty too."

Gerald: "I'm tired. Why can I not eat snack right now?"

Chloe: "I'm cold"

Sam: "I always get tired"

Some teachers mentioned it may be more effective to play board games at the beginning of the class sessions before children get antsy instead of after they have been sitting and working on classwork, so children will engage more with the board games and get less distracted.

Most of the children did not mention any differences between playing the games the first and second time. Peyton, for example shouted, "Nothing!" was different between the first and second *Tapple* sessions, though Caleb commented, "We found new stuff and we used cards!" and Levi mentioned, "Oh I know! We had a different table and a different teacher." Most children seemed to enjoy playing games multiple times, but some children, were not as interested or engaged playing the games the second time, perhaps because they perceived the games as less exciting as the novelty of the game wears off with subsequent plays. Quinn, for example, remarked that the second time playing *Appletters* was "boring because I already did it once ... I did it a hundred times... a lot!" Similarly, Caleb responded, "This time was fun," but added that it was, "better last time." Also even though Hailey had responded that playing *Appletters* was fun after the first session, the second time she remarked, "I don't like it!" and didn't have suggestions for improvement.

Teachers noted that playing games requires a lot of patience for the children involved. Jessica described that waiting for their turn was "impossible" for the children. Mandy commented that she tried to keep turns short because, "I think if it was a longer turn they would've gotten impatient." Terrence pointed out the problems of down time: "it's that game part that is frustrating...there is not a lot for them to do when its not their turn...Its

hard for them not to have something do while they're waiting." He mentioned next time he might just play halfway through the track on the *Super Why* board, an approach he has taken previously when playing *Chutes and Ladders* with young children.

Lisa stressed the importance of "knowing when the students are kind of clocking out and either getting them back in it or knowing when to transition to another game or activity." Abby noted that the children "just get frustrated and kind of zone out a lot," especially when tasks in the game are beyond their abilities. Teachers frequently changed aspects of their game sessions when students were showing signs of boredom. Based on observations of game play and suggestions from teachers, best practices for keeping children more engaged when playing games include playing games before students have already been working on seatwork, modifying games to follow the interests and abilities of players, having shorter time between turns or something for children to do when it is not their turn, and observing students in order to transition them to different activities when they begin losing interest in the game.

Theme 4: Things Kids Need to Know for Kindergarten

It was expected that themes and subthemes would emerge related to the teaching and learning of literacy skills when considering the experiences of children and their teachers playing literacy games. The first subtheme, *"I got you! That's your name!"*, discusses the role of names related to game play. The second subtheme, *"P IS in millipede! You heard that P sound"*, looks at letters and letter sounds. The third subtheme *"It's the ending sound that makes the rhyme"*, examines the role of rhyming in the games.

Subtheme 4a: I got you! That's your name!

Names emerged as a subtheme related to literacy learning and games. When the children played the games, the role of their names as words was important. Names have a deeply personal role. Using the names of self and others in a game environment allows

the creation of a sense of ownership by the players and connection to one another. This connective role is often used with this age group for letter and sound practice. Children were excited to make their own names as well as the names of names of teachers and friends. Maria excitedly exclaimed, "We're making our names!" When children were asked what they found fun about *Appletters*, they found spelling words, especially their names to be fun:

Elizabeth: "We were spelling things"

Quinn: "Yeah like our names."

Elizabeth: "You try to make your name... We spelled the teacher and the kids' names."

Teachers sometimes used names as opportunities for teachable moments for example Marlene chose a "T" tile and asked children if anyone had the letter in their name. Tara shouted, "ME me me me me me!!!" and answered that the letter "T" was at the beginning, not the end of her name when asked by Marlene. Keith also raised his hand excitedly. Marlene replied, "You have a T in your name! But does it make the "tuh tuh" sound?" Keith shook his head no, and Marlene agreed: "It doesn't. There are two letters that make a "th" sound in your name!" Later in the game Marlene noticed that Tara had spelled her own name with her tiles and pointed this out, "Tara! You found the letters in your name! Now read it, T A R A. When you put letters together they spell words!"

Children suggested making names when not prompted to do so by the teachers. Jon suggested, "How about we build someone else's name?!" to which Lisa responded, "You want to spell someone else's name? ... you want to choose a classmate? Okay ... So pick another classmate and make sure you have all the letters in your name." In later rounds Lisa incorporated this suggestion into leading *Appletters*, telling children, "I have an idea. I want you to think of a friend's name in the class... If you've thought of a friend spell THEIR name... I'm excited to see!" Jessica told the students that they were thinking

of L words. Keri shouted "Linda! [classmate's name]." Jessica exclaimed, "That's a great one, Keri. We can use our friend's names!" Similarly, on Elena's turn, before she was given a category, Elena exclaimed, "Diana! Diana is my friend!" Some children in the summer session suggested spelling their last names with letter tiles, but many of the children didn't know how to spell their last names or could not find some of the letters needed to spell their last name, so the teachers encouraged staying with first names.

Names represented more than just letters and words for many of the children but were tied closely with issues of ownership and self-identity. While this increased interest and engagement, it also had the potential to go wrong when the way the teachers facilitate the game did not allow children to maintain ownership over their own names. Maria didn't like losing control over her name by removing *Appletters* tiles to create a name crossword or trading the letters from her name with a friend so they could spell her name. This may be in part because she perceived removing letters from her name or trading the letters to her name as not just letters but in part her identity. On a similar note, two of the *Tapple* categories were boys' names and girls' names. These sometimes frustrated students when they were not allowed to create their own name or say names of friends of a different gender than the category. Names did not play a role in *The Super Why ABC Letter Game*, but there were some instances where choosing character tokens or answering categories represented by a character of the same gender seemed to be an important consideration related to student's self-identity. It may be important for teachers to preview games to ensure that student identity is acknowledged in game sessions.

Subtheme 4b: But P IS in millipede! You heard that P sound.

Letters and letter sounds emerged as a literacy-related subtheme. Teachers frequently mentioned that their students learned about letter sounds when playing the games. Teachers emphasized letter sounds in words, especially at the beginning of words. During a game

of *Appletters*, Megan emphasized her pronunciation to help her students hear letter sounds in the words they were using, stating, "Ck-Aaa-Nnn. What makes the Nnn sound?" Lisa told Maria, "We can sound [spider] out [...] how do we spell Spider? SPI-Duh sounds Duh Duh." Jessica took a similar approach, focusing on ending sounds, telling the children to, "listen to my last sound Puh Ih GUH guh guh," and Abby focused on blending by putting "all of these sounds together. What word does it make? Huh Ih Mmm. Let's say it a little bit faster. Hhhhiiiimmm. Him."

Peyton pushed his *Appletters* tiles together to form "NIOMIARL," proudly remarking that he spelled a word. Marlene observed a teachable moment for letter sounds in this responding, "You put letters together, and sometimes they spell words. Let's see what Peyton's sounds like!" Peyton tried to sound out the jumbled letters he had assembled in front of him, "Nioma?" Marlene responded to his attempt respectfully but with a touch of humor, "Maybe, but I see an L at the end of it, maybe... niomiarl... That's a nonsense word, that's what you call that." She and the kids laughed together. Peyton responded to this attention by adding another letter to see what would happen, exclaiming, "Now read it! Now read it!" Marlene responded to his new game, "Okay, I'll try to read it. I'm reading it by knowing my letter sounds... Niomiarle."

Peyton's game with "nonsense words" was not the only time that children found excitement in playing with letter sounds. At one point, this play with sounds emerged in a student-created game using components from *Appletters* and *Tapple* with Elizabeth acting as the teacher:

Jennifer: "Uh Uh."

Elizabeth: "What does this one make?" *[Holding W]*

Jennifer: "Ooh... no, ... Wah Wah" *[Elizabeth holding B]* "Buh Buh B!" ...

Elizabeth: "What do you think they make? Letter sounds!"

For all of the fascination and fun surrounding letter sounds, this also posed some

difficulty for the children. Many children struggled with the letter C, confusing it with K or S sounds. Hailey was confused about the beginning letter of "car seat" Quinn with "cake" and "carrot" and Diana with "cat," thinking that the words began with the letter "K." Similarly, Claire misidentified the beginning letter of "skeleton" and Jennifer "soccer" and "sauce," thinking that these words began with "C" instead of "S." When this happened, teachers often transformed the mistake into a teachable moment, pointing out the other letter making the same sound:

Jessica : "It doesn't start with a K, but what's another letter that makes that sound? It starts with a C, can you find that letter?"

Terrence : "That makes the same sound but car seat starts with the letter C... That was a tricky one because it makes the same sound!"

Sarah : "It's not with a K. What's the other letter that makes the Cuh sound? [...] K makes the same sound as car [...] but we're not pressing it because it's not in the word."

The teachers all identified letter recognition and letter-sound connection as valuable skills that their students learned and practiced while playing *Appletters*. Jessica remarked about the value of practicing letter sounds "because we were working on that anyways. I think the phonemes of all the sounds in the word and combining it together to make a word... I think we're working on that." Abby agreed that this was valuable but remarked that this introduced a new concept for her students: "I guess we don't really do a whole lot with letters and letter sounds and working with words at all, or we haven't so far in the semester. So, I think if you could sit them down and say, 'Okay, this letter makes this sound', I think that is a benefit for them because they need to know that for kindergarten so the letters and the letter sounds are really beneficial."

While the teachers found value in the way the games cover these topics, with Mandy expressing that sound-letter recognitions is "one of the biggest things kids learn and need

to know for kindergarten" they also highlighted the importance of teacher facilitation and bringing the content of the game to where the students are in their learning. She expressed that *Tapple* was really helpful with that, but reiterated that the teacher's facilitation of the game was important: "I always try to make them figure out the sounds the word starts with and then try to connect the letter with the sound because they aren't as familiar with the visual of words." Sarah pointed out that *Tapple* "helps them identify letter sounds, but they don't know all of what the letters look like." She added that, while students often struggled to identify letters with the same sound, "like Gs and Js for giraffe," she felt like "it was appropriate because it helps them think more and more about it." She remarked that the way a teacher approaches the game matters, including talking with children and pointing letters out. Comparing *Tapple* to "manipulatives or something with letters," she explained that it could be "another way to form those letters." Sarah commented, "It gets them thinking...I think it was [a good use of classroom time], I mean even Quinn saying he learned letter sounds... makes me think he learned something. So that's nice to hear."

Terrence and Brittany highlighted *The Super Why ABC Letter Game* as useful for teaching literacy skills, explaining that students learned upper and lower case letters and letter sounds with Terrence adding, "some of them hadn't had much practice with that."

When facilitating games for preschool children, teachers may need to consider what skills children are familiar with and what skills they are still learning and may struggle more with. The teachers facilitating the games identified that children for the most part are familiar with, and can identify letters by name, but making letter sound connections, especially in the context of putting letters together to form words is still largely a novel and challenging task for most of the children playing the game. Recognizing this fact can be useful in planning how to structure playing the game to teach and practice these concepts and support student learning as they play the games.

Subtheme 4c: It's the ending sound that makes the rhyme.

The role of rhyming in the games emerged as a literacy-related subtheme. Teachers focused on the value of rhyming as part of early literacy instruction. Rhyming is an explicit part of *The Super Why ABC Letter Game* where the *Wonder Red* category predominantly focuses on rhyming skills. Brittany highlighted rhyme and letters sound as a specific benefit of *The Super Why ABC Letter Game* while expressing surprise that some students struggled more with rhyming in the game than she had expected because she had observed them using rhyme well in other contexts. Teachers prepared their students to find rhyming words by reminding them that when words rhyme, they share an ending sound. For example, Sarah told her students "P is at the end of cap. If something rhymes it has the same ending with a different beginning. So something like zap rhymes with tap" and Brittany corrected Ann when she answered that "Sate" rhymed with "Cake" and "Rake," "No you're saying SaTe. That would be sake rhymes with cake. Ends with an ake sound ... It's the ending sound that makes the rhyme."

Even though rhyming was not explicitly part of the game rules for *Appletters* or *Tapple*, teachers also emphasized rhyming words in these games. In *Appletters* for example, Lisa pointed out to Jon, "You spelled go and no. Those sound a lot alike don't they? [...] They rhyme. They end the same." Rhyming is an important early literacy skill. Preschool teachers may want to consider playing games that focus on rhyming skills and even in games that don't explicitly focus on rhyming skills, they perhaps should consider ways to incorporate rhyming skills into the game.

Theme 5: Maybe She's Thinking

When students play games with teachers in an educational context, themes and subthemes emerge relating to cognitive considerations when using a game in these settings. The first subtheme, *"Sometimes we just need to take our time"*, shows the importance

of allowing sufficient time for children's cognitive processing. The second subtheme, *"Halloween we get candy"* discusses the peril of distracting seductive details. The third subtheme, *"If they played it a couple different times they could learn"* discusses learning through repeated practice. The fourth subtheme, *"One two three four"*, examines the crossover incorporation of counting and numerical skills. Opportunities for creative thinking during gameplay are discussed in the final subtheme, *"Thinking outside the box"*.

Subtheme 5a: Sometimes we just need to take our time.

The importance of allowing sufficient time for children's cognitive processing emerged as a subtheme related to cognitive considerations of games. Sometimes students need time to think, especially who are more reserved when in larger groups. When Sam paused to look for the letter "D" on the *Tapple* board Teacher Sarah supported this need remarking, "Sometimes we just need to take our time." This also created an opportunity for students to understand the need for reflection. When Jennifer looked to her teacher, Mandy, to reflect on her options in a game of *Tapple*, quietly flicking her fingers against her lips, her friend Amelia empathized "Maybe she's thinking." Sometimes teachers needed to guide this understanding, such as when Daniel became frustrated that Hailey was taking a long time looking for the letter "G" on the *Tapple* board and reached for the answer, but Teacher Terrence intervened, reminding him to "let her find it." Terrence showed similar encouragement in a round of *The Super Why ABC Letter Game*, telling Levi "You're getting it! Take your time" when he paused to look for an upper case "A." It is important for teachers to be aware of the differences in learners' skills. Effectively managing games with a group of players with different skill levels may require teachers to provide more scaffolding for less experienced players, and providing challenging tasks for learners with more advanced skills.

Subtheme 5b: Halloween we get candy.

One cognitive concern about games in the classroom is that they might provide distractingly seductive detail, and there were a few interactions that supported this concern. For example, Gerald's attention diverted from letter sounds to fun things associated with holidays:

Gerald: "I want to do Easter"

Mandy: "Okay. What letter does Easter start with? An E."

Gerald: "I was going to do fireworks!"

Mandy: "Okay what's another holiday? Valentines day? Oh, we don't have a letter V... Choose a different one..."

Gerald: "Halloween we get candy."

Some students, when playing *The Super Why ABC Letter Game*, became overfocused on details related to the *Super Why* television show or characters. Additionally, some of the details of the show might not make as much sense for students who are not familiar with it.

Children also expressed a desire for more choice and personalization, though this desire focused more on physical attributes rather than on game rules or mechanics:

Maria: "It's not very fun for me. It's not sparkly... It would be better with more sparkles... If we could choose our own color, I'd choose pink. Emily would choose purple and Gerald would choose blue."

Jon: "I'd choose orange."

Gerald: "In the olden days I'd always write my name in blue, and now I write my name orange."

While it may not be possible to completely mitigate distracting factors, awareness of potential seductive details may help teachers to keep students focus on learning details

rather than those which may add additional cognitive load.

Subtheme 5c: If they played it a couple times they could learn.

Learning through repeated practice emerged as a cognitive subtheme. Children seemed to grasp both literacy concepts and game play dynamics better when playing games for the second and further times after learning the game rules, Aaron commenting that, "It's fun to see new words that you know from kindergarten, like its good to see them before you're going to first grade." This reflection on the value of exposure, practice, and repetition is an important subtheme of the experience of children playing the games.

Teachers expressed a belief that children can learn literacy skills through repeated exposure to the game experiences over time. Lisa observed that her students had less difficulty connecting lower and upper case letters when they played *Appletters* for the second time, remarking "I wonder if it is because they are having more experience with it now. Because last time was the first time that they had to, you know, make those connections—it might have been difficult but if they have to do that more and more they get the practice with it." Abby gave the example, "At the beginning, Hailey didn't know what sound 'I' made, but at the end there was another word with 'I' in it [...] and she said 'Ih', so I think they are remembering the sounds they make." Sarah expressed that she would change the way she would play the *Tapple* game with students after they'd had an initial exposure and practice with the rules of the game, mentioning that she would use "the first time just getting to know the game and maybe the second time I would do the timer. See what varies and the differences." Discussing her experiences with *The Super Why ABC Letter Game*, Brittany offered, "I think if they had more repetition or more times playing it and they're asked look for the two letters of chair and they could do chu CH ... and if they played it a couple different times and really engage they could learn different letter sounds... Like with Elizabeth she didn't know the 'N' sound but maybe if

she got another card with an 'N' and another card with an 'N' she would start picking that up." With games, as in other facets of learning, multiple exposures to material seems important. After instruction, teachers can use games as a tool to practice and reinforce skills by playing further rounds.

Subtheme 5d: One two three four.

Extending and connecting learning emerged as a cognitive subtheme, in particular opportunities for teachers to incorporate counting and numerical skills while playing literacy tabletop games. Lisa pointed out the number of *Appletters* tiles that the children had used to spell their names, remarking, "I see Elizabeth has four letters, I see Gerald has three." She also made putting the game away into a counting exercise, asking the children to count out five tiles and place them into the bag. Jessica also added counting to a game of *Appletters*, instructing the children to draw and count three tiles each. The children drew new tiles to add to their stacks, counting "one, two, three, four, five."

Marlene also encouraged the children to count tiles, telling them, "Everyone on the count of three grab THREE tiles. Okay, ready? One, two, three! Okay I've got three, who else has three tiles?" Amy responded, "I accidentally got four, but I put one back." Abby incorporated number skills into *Appletters* by choosing to spell a number word with the tiles, telling her students, "Think of a number...it comes after nine." Hailey started counting, "One, two, three, four, five six, seven, eight, nine, TEN!"

Most of the teachers did not reinforce counting skills with *Tapple*. As a notable exception, Terrence let children keep their cards in one session and instructed them to count how many cards they had at the end of the game.

The board sometimes also encouraged engagement with numbers, such as when children counted as they moved their pieces along the game board in *The Super Why ABC Letter Game*—a practice the teachers encouraged. For example, when Maria spun four on

the spinner and moved her piece, counting "One, two, three, four," her classmate Gerald watched and asked, "Who's going to do five?" Looking for other curricular affordances to incorporate into game play may be an important consideration for teachers when playing games with their students.

Subtheme 5e: Thinking outside the box.

Opportunities for creative thinking during gameplay emerged as a cognitive subtheme. Teachers highlighted the value of children having opportunities to develop and express creative ideas and found playing the games to be a beneficial outlet for this. Mandy pointed out that the games promoted creativity by letting the kids "think of things on their own, especially if they were one of the last people to go so kind of going outside of the vegetable is tomato or whatever, and thinking of more unique types of things." Sarah observed her students thinking more creatively when connecting letters to sounds in *Tapple* when they looked for novel answers "like those animals outside of the box... Besides the basic ones [like] dog and cat... Now what other sounds can we do?" Abby found that her students were able to "be more creative, like one card could be heroes and they could come up with anything with a sound for that category," noting that she praised Amy for her creative answer "Hope Smith" to the category.

Games have the potential to provide opportunities to promote creativity and critical thinking. Teachers and designers can learn lessons from observing children and can try to design or structure game sessions in ways that encourages rather than stifles creativity and critical thinking.

Theme 6: A Lot of Teamwork and Effort

Beyond the interactions of the game itself, there are also important social lessons to be learned involving the teamwork required to play games in general. When children play games, they find themselves negotiating social interactions and experiences with their

peers and teachers. This theme has several aspects including peers seeking and giving help, the conflicts that emerge when peer assistance becomes detrimental by overshadowing students' ability to answer on their own turns, and they ways that teachers encourage children to develop appropriate social interactions during game play. Several subthemes emerged within this theme. Peer helping is discussed in the first subtheme, *"So Many Helping Hands"*. The second subtheme, *"I wanted to find it! You did it for me"* examines the fine line between helping and overshadowing peers' turns. Cross-game interactions are detailed in the final subtheme, *"Interested in the other game"*.

Subtheme 6a: So many helping hands!

Peer helping emerged as a subtheme related to social interactions. Preschool children are still in the process of learning social skills like taking turns and often needed guidance during game play to manage these social interactions appropriately. Students frequently asked their peers for help as well as offering help to classmates when they were struggling to answer questions or spell words during the game. Teachers encouraged them to find calm polite ways to both ask for and offer help when difficulties appeared. For example, when children were trying to build their names in *Appletters*, they called out needed letters and responded by helping each other find them. Teacher Lisa encouraged and praised this behavior, exclaiming, "So many helping hands!" and "Oh! Maria Thank you for helping Jon find a J." She also encouraged students to ask for help finding tiles, suggesting that they ask "Can you help me?" Similarly, Teacher Terrence told Elena to be ready to help her friend if needed: "Okay, Hailey is going to draw a letter, but she might need some help so you need to come back to help her." When Hailey reached across *The Super Why ABC Letter Game* board to point out the word nest to Claire, Teacher Abby encouraged her by remarking, "Oh look, Hailey's helping you out!". In response, Claire cheerfully exclaimed, "Thanks Hailey!" Teacher Terrence found that the biggest benefit of *The*

Super Why ABC Letter Game was in promoting social interaction, remarking that the kids did a good job at taking turns and following rules. In addition, he observed the importance of teaching patience and supporting social and emotional skills, which were experienced in *Super Why* and important because "they will need that in kindergarten."

As learners of turn taking, children would often try to play on someone else's turn and teachers generally reminded them to let others have a turn when this happened. The way each teacher handled the level of input and peer helping on other student's turns was different, however. Some teachers were more encouraging of helping peers, such as Lisa who remarked, "If a student couldn't find a letter they would first state that 'I can't find the letter' and it seems like all the other students were searching for that letter to help the other that needs to find it, which I think is great social skills, you know, teamwork and things like that." Teacher Brittany recalled, "The children were definitely working together" during a game of *Appletters*: "Maybe if Sam needed a D that was all the way over here he would have to ask Karen for that D. And, using manners, if they are trying to search for something and someone puts their hand on top, Sam might say 'Quinn you're on top of my letter, can you move your hand?'... So being helpful, friendly... I definitely facilitated." She found this to be true for *Tapple* as well, expressing that "socializing and taking turns and passing the spinner around would be one benefit as well as following directions and following rules... making sure everyone has their turn."

Teacher Mandy, on the other hand, discouraged interactions between students, seeming to view these interactions as a disruption to turn taking instead of as a helping behavior. She reported, "There was some whispering going on. Like, one little girl was stuck on a vegetable and the girl next to her was like 'Tomato.' Other than that there wasn't a whole lot of social interactions. I was kind of like, 'Okay, now it's your turn, and now it's your turn."

As preschool children learn social skills, positive game experiences can provide a struc-

tured way for young children to learn these essential social interactions and boundaries. Teachers should encourage interactions, yet be mindful to monitor these interactions in order to maintain structure so children can learn appropriate circumstances to ask for help, and cooperate with peers while respecting other player's turns.

Subtheme 6b: I wanted to find it! You did it for me!

An important social subtheme that emerged when playing literacy games was the fine line between helping and overshadowing peers' turns. Teachers mentioned concerns about turn taking more than any other social skill, and the line between children helping their peers and taking over their peers' turns sometimes seemed difficult. Terrence observed encouraging and supportive actions among the children but noted that while "a lot of them were wanting to help each other and blurt out answers, you have to encourage them to let the child's turn that it is have a chance." Abby also commented, "It's hard for them too when there's turn taking. I think some of that probably comes with age."

The biggest disadvantage Abby mentioned for *Tapple* was, "probably the fact that they had to take turns, but that's going to be any game. They were getting really antsy and when it was somebody else's turn they would shout out an answer." Sometimes, children's attempts to help dominated other student's turns in a way that prevented them from answering for themselves and learning the skills taught by the game. This appeared to be particularly frustrating for students who needed more time to think or wanted to answer or do tasks for themselves, and the teachers had to remind students to let their peers take their turn and act respectfully toward other peers at the game table:

Brittany: "This is Sam's turn, so no one else can go."

Jessica: "It's not your turn! No thank you Elena, or you're not going to get to play anymore."

Terrence: "Can you let [Levi] do it because he's not learning if you do it for him."

Abby: "Remember it's Claire's turn, so if you find [the answer], just keep it in your head"

Sarah mentioned that peers' suggestions were sometimes frustrating for the children, giving the example playing *Tapple*, "Quinn would say some word and Jennifer would already point to the first letter sound because he was having trouble finding it. He didn't always like that but it helped him." Similarly, when Terrence told Caleb, "Ask Diana. She's telling you D. Can you find the D, or do you need some help?" and Diana pointed to the letter D, Caleb objected, "I want to get to do it!" Describing peer interaction in her *Super Why* game session Brittany explained, "I know for the older kids I could tell Ann was like almost out of her skin wanting to help the younger kids with like matching, so being patient and letting other children have their turn would definitely be a part of the social interaction."

This theme highlights the importance of ownership in play participation as well as demonstrating teacher's critical role of facilitator in promoting this ownership through their facilitation of games.

Subtheme 6c: Interested in the other game.

Cross-game interactions emerged as a subtheme related to social interactions within games. In the classroom, there were often multiple rounds of the same or different games taking place simultaneously and this led to a reasonable amount of interest by children in the other tables. Frequently the children would stop to watch what was going on at nearby game tables instead of focusing on their own game. For example, when playing *The Super Why ABC Game* with Jessica, Peyton seemed curious about what was going on at the other table and told her that he wanted to join the other game being played across the room, but Jessica asked him to stay since "they are playing the same game at the other table" There seemed to be more cross interest in games when different games

were played at tables in the same room or area than when children were playing the same game at different tables.

It was also apparent that answers and discussion within one game session would have an influence on the interactions in other games. In a game of *Tapple*, Teacher Mandy gave the example "Adam" for the topic "Boys' Names" and suggested that students look to the other table and use names of male friends playing the other game. After Teacher Sarah asked students playing *The Super Why ABC Game* to find a word that rhymes with "Car," Jon, who was playing *Tapple* at another table, gave "Car" as an answer in his game. Cross-table interaction led to concern among the teachers that it might become difficult to keep their students on task and not distracted by the other game. Brittany remarked, "I think we definitely could've gone longer but then again they were kind of interested in the other game that was going on."

When teachers are playing multiple games in the same classroom or area, it may be helpful for them to consider cross game interactions or distractions and how that can impact game play.

5 | Discussion

The central question of the present research was, "How are literacy tabletop games experienced by learners and teachers in a preschool setting?" Literacy games can be a valuable tool for early literacy learning, but it is important for educators to take into account several best practices and considerations when playing tabletop literacy games with students as a part of their curriculum. During examination of multiple game play sessions with students and their teachers, themes were identified linked to play and games, developmentally appropriate practice, motivation, literacy, cognition, and sociocultural considerations (see Table 3). These themes provide insights addressing the question of what we can understand about positive and negative affordances of literacy tabletop games in preschool classrooms.

Tabletop Literacy Game Affordances

One focal question posed by this research was "What affordances provided by tabletop games are relevant to preschool classrooms?" Children participate in many playful activities daily, but formal board games are not typically part of their classroom routine. Because of this, some teachers worried that children would struggle with games, although children seemed to be more familiar with tabletop games than predicted by their teachers. The literacy board games seemed in general to support the teaching and learning of early literacy skills including letter recognition, phoneme-grapheme connections, and rhyming. Multiple play sessions for each of the three games afforded repeated opportunities for learners to actively practice these skills, and some children were able to correctly perform

Table 3: Summary of Best Practices

Play and Games
Ensure letters are clear and understandable to all players.
Verify that all needed letters are available for instructional goals.
Carefully consider whether modifications integrate effectively.
Provide breaks for movement or incorporate physical activity into game play.
Carefully consider durability and tactility of components.
Apply rules clearly and consistently.
Teacher Practice
Target difficulty to student zones of proximal development.
Provide guidance and encouragement to players.
Bridge other classroom curriculum into game play.
Consider using games for formative assessment.
Motivation
Monitor and address physical needs of the players.
Adjust game and turn length for attentional needs.
Reduce distraction by providing off-turn activity.
Align games to interest and prior knowledge
Promote choice and ownership.
Encourage an open respectful environment for student ideas.
Avoid overfocus on competitive comparison between students.
Improve replay value by bringing new ideas to future play sessions.
Cognition
Allow time to make decisions and process game events.
Enable opportunities for hands-on repeated practice.
Redirect students from seductive design details as necessary.
Consider opportunities for cross-curricular usage in gameplay.
Social Interaction
Allow opportunities for interaction and collaboration.
Be mindful of protecting player ownership in the game space.
Encourage reflection and patience during others' turns.
Construct safe low-risk environments that encourage relatedness.

tasks in subsequent games that had been difficult for them in the beginning. Children's improved skills at using upper-case letter tiles to match the lower case letters of the word cards is one example. This seems to support constructivist notions of learning and schema development through hands-on and engaged repeated practice.

At the same time, some design features of the games posed concerns. One important concern involved the choice by game designers to omit rarer letters from the game in order to prevent the player from needing to encounter difficult to use letters. This is of concern when working with preschool children because the missing letters did not allow some students to make their names, which denied them a sense of ownership in the game and made a typical practice opportunity difficult for teachers to implement. When fonts, particularly sans-serif fonts, did not match children's expectations for recognizing letters, children seemed to show confusion. Some of these issues, however, seem to have arisen primarily due to teacher-developed modifications added to the existing games, for instance teacher-created picture word cards, rather than a factor of the unmodified games.

When targeting a preschool audience, game designers should be especially mindful when making choices about which fonts to include in games to make it easier for children to identify and distinguish letters. Letters should be clearly distinguishable and easily identified. It may be more appropriate for game designers to use upper-case letters in serif fonts, as children may be less familiar with lower-case letters or sans-serif fonts. Also when making game modifications, teachers should playtest unmodified games before making modifications and consider whether modifications intended to help might become confusing to children due to incongruities with existing game rules and components. Children may become confused if letter case or font type does not match those used by designers in the original unmodified game. Teachers should also be mindful to consider whether modifications will integrate effectively with existing game mechanics and how potential modifications may change game affordances.

Board games usually require players to stay at the game table during the game. Because of this factor, teachers expressed concern about lack of movement in board games, which do not typically have as much physical activity as many other preschool activities. This concern was somewhat justified when children frequently showed signs of restlessness

and boredom when they had been playing board games for extended lengths of time. Game designers might want to consider ways to incorporate more active movement into games for a preschool audience. When using games for learning in a preschool classroom, teachers should consider opportunities for breaks and movement between game sessions or ways to incorporate movement into game play. A variant of the game *Twister* (Foley, Guyer, & Rabens, 1966) where children move to match letters or simple words or a game where children move around the classroom and trade letters with peers to make their names or other simple known words could be potential game ideas incorporating movement.

Affordances related to the tabletop game components also influenced teacher's and children's experiences playing the games. Durability of components was an important factor. For instance, pieces accidentally fell to the floor, the *Tapple* battery compartment came loose, *Super Why* player tokens came out of their bases, and children sometimes bent cards. While the components of the selected games seemed to have good quality in general, preschool children can be hard on games, and designers and teachers may wish to consider durability factors when creating, selecting, implementing, or modifying games for use in a preschool classroom. Some concerns with wear on pieces may be unavoidable for a young target audience, and there are often other factors such as cost that determine game design material choice. It may be useful however for game designers to look at techniques used by manufacturers of preschool children's toys to improve durability or look at ways companies with games targeted toward younger players such as HABA and Gamewright have crafted tabletop game components.

Access during game play to game components such as *Appletters* tiles, the *Tapple* board and the *Super Why* spinner was another important factor. Teachers frequently reminded children to put them in the middle of the table so their classmates could have access to them. While hoarding components was somewhat problematic, the ability for players to collect components such as completed words, category cards, or task cards

and to keep these components in front of them during the game seemed to have a positive influence on engagement when components were associated with accomplishment or ownership within the game experience as was demonstrated when children expressed that they wished they could keep their category and task cards and created words during their game play.

Children seemed to find toy-like elements of the games, such as the *Tapple* board, and familiar character or story elements of the game, such as the *Super Why* player tokens and cards, to be interesting. While these affordances may increase student motivation, game designers and teachers should be mindful that these features also may have the potential to distract from learning objectives and generate extraneous cognitive load. Teachers can mitigate this by acknowledging interesting details and allowing students to express interest in these details but monitoring and redirecting students when they seem overly focused on seductive details of the games.

Interest and Motivation for Literacy Tabletop Games

A second question posed by this research was, "What can be understood about children's interest when playing classroom games?" Games seemed to lead to increased engagement when they were aligned with children's interest and prior knowledge in a meaningful or playful manner, such as when Quinn was able to relate *Tapple* to his toy, Snow Tigey. When children perceived a game as disconnected from playfulness, however, their classroom experience was negatively impacted. As would be predicted by Self Determination Theory (Deci & Ryan, 1985), personal interest, a sense of ownership, and choice in games seemed to have a positive impact on student motivation. Many children showed pride in their accomplishments in the games and seemed excited about learning when they gave *Tapple* answers, made words playing *Appletters*, and correctly answered

card tasks in *The Super Why ABC Letter Game*. Praise and acknowledgement of student answers by teachers also seemed to stimulate learners' engagement and motivation. When children's answers were rejected, however, they often became frustrated. It may be helpful for teachers to guide children in providing appropriate answers in a manner less potentially undermining to motivation such as when Lisa guided Jon step by step to fix his misspelling the word "Sun" by sounding out the word as misspelled.

Most children had limited attention spans, and many seemed to become frustrated and less engaged when they felt that their physical needs for water, food, or rest were not being met. The role of teachers to monitor when students are losing interest was also important. Shorter overall play session length and shorter times between student's turns, providing something to keep children occupied when it was not their turn, and giving them a brief opportunity to "play" with the game components before and after the game appeared to help decrease students' distractions. Shorter turns also have the potential benefit to provide each student more opportunities to practice skills, which can improve learning, development of automaticity, and skill mastery. Playing tabletop games before children have already been sitting and working on classwork may also improve engagement. Finally, some children may have appeared less interested or engaged when playing the games on subsequent play sessions because the game lost novelty for them. One potential consideration for game designers and teachers is to consider replay value, and ways to bring new ideas and experiences into subsequent play sessions to avoid repetition while maintaining interest. Potential ways to improve game replay include creating new category or task cards and incorporating current curriculum into game play.

There was competition in game sessions as illustrated by Diana and Peyton in their light arguments about who was ahead at a given point in the game, but this generally did not appear to be demotivating for students or interfere with their learning. Perhaps there were some positive benefits and fewer negative effects because the teachers were

not focused on comparison of student abilities. Although there were some inconsistencies during play sessions, teachers should always be mindful to make sure rules are applied in a clear, fair, and consistent way.

Integration of Games and Preschool Curriculum

The third question posed by this research was, "How do teachers connect literacy games to classroom curriculum and student interest?" Several of the teachers brought elements of classroom curriculum into game play, connecting the games to things they had recently experienced or learned in their classroom such as lessons learned from a visiting entomologist or reminders of things they had seen on walks or eaten for lunch at school. Some teachers followed official game rules closely while others made several modifications or were more lax about enforcing official rules. When teachers chose to make modifications to the games, they often considered their student's current and potential literacy skills. Because most teachers made modifications to the games, it is more difficult to assess whether children would have been able to address the challenges of the games before modifications were made. It seems possible that the games might not have been ideally developmentally appropriate for preschool children without teacher modifications or support. Children were sometimes reluctant to embrace challenges, but seemed to succeed at completing tasks with teacher guidance and encouragement. Several teachers mentioned that they would like for more difficulty level variation to be built into the games, which may be an important consideration for game designers as games are likely to be most effective at promoting early literacy skills when they meet students' zones of proximal development and are not so challenging that they lead to frustration nor so simple that they lead to boredom. Some teachers mentioned using literacy games as a tool for formative assessment to see if children were able to recognize letters and

connect them to letter sounds and mentioned this could help them to document student skills. Teachers also incorporated counting and numerical skills as well as opportunities for creative thinking into game play. Some of the teachers also identified that it would work well to implement literacy games in preschool activity centers, although children might need adult facilitation to play the games properly.

Social Interactions

A final question posed by this research was, "How do young learners, who are developing social interaction skills, experience the social play of games?" Students frequently demonstrated cooperative teamwork by asking their peers for help as well as by offering help to classmates when they struggled to answer questions or spell words during the game. Most teachers praised this and encouraged students to politely ask for and offer help. A few teachers, however, seemed to discourage interactions between students. Positive game experiences can provide a structured way for young children to learn social skills. Teachers should encourage interactions, yet be mindful to monitor these interactions in order to maintain structure, especially when children's attempts to help overshadow their peers' turns and prevent them from answering for themselves or developing new skills. This appeared to be particularly frustrating for students who needed more time to think or those who were more reserved in group play, such as Jennifer's experience playing *Tapple* where she needed extra time to think but was not given this by the rest of her play group. Teachers should be mindful of the importance of allowing sufficient time for children's cognitive processing, encourage students that it is okay to take time to reflect, and demonstrate the value of having patience on their peers' turns. This contributes to a safe, low-risk environment for students to interact.

Limitations and Directions for Further Research

As a case study, the ideas discussed in this research are limited to the experiences of a subset of teachers and students as they interacted with *Appletters*, *Tapple*, and *The Super Why ABC Letter Game*. More specifically, the students interacted with the particular modifications made to the base rules for these games in their school environment.

Because the present research was in a school with plentiful resources and high involvement, it is important to consider the experiences of a variety of schools to examine these experiences in a broader context. Experiences of preschool students and teachers could likely be different outside the context of a university-affiliated child development center setting. Additionally, all the teachers in the study were White and students from African-American and Native American backgrounds did not participate in this study. The experiences of teachers and students from different racial or ethnic backgrounds could possibly reveal different contexts to the questions posed by this research. Many of the teachers who facilitated the games with preschool students were teachers in training and the limits of their classroom perspective represent a context that does not necessarily reflect the majority of teaching professionals. Experienced teachers in this study did seem to be more generally comfortable with facilitating the literacy games, however. Consequently, investigating methods and approaches to integrate and support games in the classroom with consideration for each of these subsets of teachers would seem to be an important area for future research in order to explore best practices as they differ or remain the same across diverse classroom structures.

This study looked broadly at experiences related to the areas of play and games, developmentally appropriate practice, motivation, literacy, cognition, and sociocultural considerations. A longer embedded investigation integrating literacy games into a classroom could potentially yield additional insight about appropriate uses of the games in this

preschool classroom context. Future research could involve more focused and in-depth explorations into each of these sub-areas. There is potential, for instance, in examining general and specific affordances of developmentally appropriate preschool games for groups of children with differing skill levels in order to illuminate best practices for teachers to scaffold children or make modifications to game rules. Other areas open to further investigation include considerations related to tabletop games and self-regulation or self-efficacy for specific tasks. The present study did not look at cultural factors in depth and it would be informative to broaden participation to examine the influence of these factors. There is also room for deeper consideration of sociocultural factors influencing young player's experiences with tabletop games, particularly in the context of discourse in a community of practice.

Because most teachers made modifications to the existing games it may be helpful to consider the experiences of teachers and students when playing the literacy games unmodified. Other literacy games (or implementations of the games) may work differently and lead to differing insights, themes, or conclusions.

Next, the present research was limited to the relatively specific and narrow age range of 3 to 6 year-old preschool students. Future research could potentially explore how tabletop games could be used to support more advanced literacy skills at the grade school level and beyond. One such potential study could explore whether games such as *Rory's Story Cubes* (O'Connor, 2005), *Nanofictionary* (Looney, 2002), or *Dixit* (Roubira, 2008) could be effectively used as narrative writing prompts for grade school students and whether added scaffolding elements such as labels for character, setting, problem and resolution game elements improve student narrative writing. Other future research could examine how tabletop games including *Set* (Falco, 1988), CO_2 (Lacerda, 2012), *Fauna* (Friese, 2008), *Mussel Madness* (Timm, 2016), *Empire Builder* (Bromley & Fawcett, 1982), *Timeline: Historical Events* (Henry, 2011) and other games could be used to support

learning in mathematics, science, and social studies domains for middle school and high school students.

Finally, the next research phase as part of an exploratory sequential mixed methods framework would be to design a board game intervention based on these qualitative findings and to conduct quantitative research to examine the outcomes of this intervention. Based on lessons learned from the current study, some important focusing considerations for developing a board game intervention may include adding explicit opportunities for players to interact and collaborate with each other, adjustment of game and turn length to be appropriate to age and number of players, incorporation of movement into the experience, deeper consideration of component durability and tactility, and granting the ability to players to keep game accomplishments present during game play to improve their sense of ownership (see Table 3). Cooperative, party, or sandbox style games could be particularly interesting formats for potential board game interventions as these genres give specific focus on social interactions and creative activity that are a generally good match to a preschool classroom. Other potential game approaches could include games with elements of sociodramatic play tied to storybook reading as well as games using breakout style mechanisms where groups of children must work together to solve tasks embedded in their classroom environment to win the game.

There would seem to be opportunities for development of preschool literacy games that move beyond the basic interventions provided by typical educational games and gamification to approach design from a more constructivist point of view that incorporates engaged roles for players, and clear goals tied to curricular aims. It will be illustrative to consider the quantitative outcomes of board game interventions designed based on the qualitative findings of the present study. Specific areas of interest include measures of literacy skill and motivation as well as measurable impact and effect of board game play on the development of early literacy skill.

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